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BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 20 1941

THE OPERABILITY OF CARCINOMA OF THE RECTUM

BY

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The Registrar-General's statistical review for England and Wales for the year 1936 reports 5,386 deaths from cancer of the rectum. This clearly indicates the magnitude of the problem presented by malignant disease in this situation—a problem, moreover, whose solution, in the present state of our knowledge, lies entirely with surgery. No assistance can as yet be sought from radiotherapy. It is particularly fortunate, therefore, that there are now available for this condition methods of surgical treatment, based on sound pathological knowledge, that are capable of yielding really excellent results. The writings of Miles (1939), Lockhart-Mummery (1934), and Gabriel (1937) leave no doubt on this point. If, however, the cure of rectal cancer on a large scale by surgery is to become a practical proposition it is essential that these methods should be widely applied: in other words, surgeons in general must endeavour to find operable a large percentage of the total number of cases of rectal carcinoma that they see. It seems to me that it is their failure to attain this objective that constitutes the most unsatisfactory feature of present-day treatment of this disease. Several surgeons have undoubtedly recorded high rates of operability in recent years; these for the most part, however, have represented the achievements of experts. It is strongly to be suspected that the unrecorded rate among surgeons who have no very special experience in this branch of surgery is still extremely low.

In considering the operability of rectal carcinoma it is essential to have a clear conception of the aims of radical surgery in this condition. The primary objective is naturally to secure a complete eradication of the disease, as measured by freedom from recurrence over a period of five years; but even where this is not achieved the operation is not to be looked upon as having been completely valueless. On the contrary, excision has a high palliative value, which must not be disregarded in assessing the benefits of radical surgery. Practically all cases improve enormously in general health after an excision, and, even though recurrence should eventually take place, the patient may meanwhile have enjoyed two, three, or more years of comfortable and useful life. This contrasts very favourably with the fate of inoperable cases treated solely by colostomy. For though colostomy relieves the obstructive element it does little to alleviate the other distressing features of an inoperable growth—the severe sacral or sciatic pain, the profuse rectal discharge, the occasional severe haemorrhages, and the formation of fistulae externally or into other organs—which, singly or combined, may render death from this cause one of the most unpleasant imaginable. So that even for advanced growths, in which the chances of a radical cure are relatively slight, excision, where possible, is always justifiable, provided that the mortality can be kept within reasonable bounds. In the hands of surgeons who possess the skill to do this the standard of operability can thus safely be raised so as to include a large proportion of these late cases.

It may be said at once that this is the attitude taken by the surgeons at St. Mark's Hospital, where approximately 120 new cases of carcinoma of the rectum are seen annually and where a high operability rate is observed. The present paper is a study of the operability of rectal cancer at that institution. It is based essentially on the recorded findings on all new cases of the condition dealt with over a period of ten years, from 1930 to 1939 inclusive—1,186 in all. Some additional material from the pathological department has also been included.

Definition of Operability

Cases classed as operable were those in which the surgeon considered the conditions favourable for a radical extirpation of the disease by operation. Not all of these patients did actually have a radical removal carried out. Some who were provisionally considered operable refused to have an excision performed because of their abhorrence of a colostomy; and others who were in the process of having such a removal and who were definitely known to be operable unfortunately succumbed after a preliminary colostomy operation or declined to proceed to the final stage. The prospect of ultimate cure was naturally less in some cases than in others, but no case was considered operable unless there appeared at the time of the operation to be some chance of complete cure. Patients on whom excision was performed but whose growths were known not to have been removed completely (as, for example, when a small secondary nodule was present in the liver) were not included. They were grouped as palliative excisions under the heading of "Inoperable" cases.

Table I shows the distribution of cases in operable and inoperable groups, and indicates the forms of treatment adopted.

TABLE I.—*Analysis of Rectal Carcinoma Material at St. Mark's Hospital (1930-9 inclusive) (1,186 Cases)*

Operable		Inoperable	
Expectant (refused operation)	23	Expectant	42
Radium	5	Curettage and diathermy	4
Local excision	38	Radium	17
Colostomy or caecostomy alone*	23	Laparotomy alone	10
Hartmann's operation	14	Colostomy	387
Perineal excision	291	Palliative excision	11
Combined excision	321		
Total	715 (60·3%)	Total	471

* Died before the second stage of a radical excision or refused further treatment.

Inoperability was determined either by an unsatisfactory general condition of the patient which rendered him unfit for a radical operation, or by an advanced state of the growth which placed it beyond the reach of surgery.

Inoperability due to Patient's General Condition

A subnormal general condition of the patient was seldom accepted as a reason for refusing operation altogether, though it may have modified the form of treatment given. Actually only 92 (8%) of the cases were thus invalidated. This is important because the majority of patients suffering from carcinoma of the rectum are elderly, and often their general condition has been considerably undermined before they present themselves for treatment. In a number of cases no very special cause was present to account for the unsatisfactory state of the patient's general health, and such cases were merely described in the notes as being " in poor general condition." In others, however, some concomitant ailment (such as cardiac disease, chronic bronchitis, emphysema, pulmonary tuberculosis, unstable mental condition, diabetes mellitus, etc.) was noted, or the patient was very obese or elderly. It is to be emphasized, however, that as a rule these conditions constituted a contraindication to operation only when they were of an advanced nature, and not a few patients manifesting lesser degrees of the same conditions successfully withstood radical excision of their growths. Particularly to be stressed is the fact that no arbitrary age limit to operability was observed, as is clearly shown in Table II, which indicates the influence of age on the operability rate in 1,171 cases in which the data were adequate for that purpose.

TABLE II.—*Effect of Age on Operability*

Age Group	Cases in Each Group	Accepted as Operable	Operability Rate
20–29	25	15	60·0%
30–39	63	42	66·7%
40–49	145	106	73·1%
50–59	351	224	63·8%
60–69	443	260	58·2%
70–79	139	65	47·0%
80–89	5	3	—
All ages ..	1,171	715	61·1%

The optimal operability rate was in the age group 40-49. In older patients the rate declined, but even in the age group 70-79 it was still practically 50%. The importance of a high operability rate in the upper age groups is amply demonstrated by the fact that *more than half (587) of the patients were over 60 years of age*. The lower operability rate in patients under 40 is not connected with the general condition at all ; it is explained, as Dukes (1940) has shown, by the fact that in younger patients rectal carcinoma assumes a more malignant form, and by the time the patient comes to the surgeon extensive spread, rendering the growth inoperable, has more often taken place.

Inoperability due to State of Growth

Having excluded the patients whose general condition was completely unsatisfactory for any form of radical treatment, there were 1,094 cases in which the decision as regards operability rested solely on the state of the growth itself. Of these, 379 were found to be inoperable. The cause of inoperability was the presence of recognizable spread of the disease to points beyond the scope of an excision. This manifested itself in the following ways : (*a*) by local fixation of the growth (spread by direct continuity of tissue) ; (*b*) the presence of hepatic metastases (venous spread) ; or (*c*) extensive involvement of the lymph glands or peritoneum (lymphatic spread).

It is important to realize that it is only at laparotomy that an accurate assessment of the operability of a rectal carcinoma can be made. For, in the first place, clinical examination alone gives no reliable information as to venous or lymphatic spread, unless it is very extensive ; and, secondly, fixity of the primary growth, as determined by rectal examination, is an untrustworthy sign on which to base a diagnosis of inoperability. Growths which appear clinically to be fixed and inoperable are often found at laparotomy to possess enough mobility to permit of excision being performed. The explanation of this may be that during a rectal examination it is naturally difficult to impart movement with the finger to a growth that is sometimes so large as almost to fill the pelvis. At laparotomy it may be possible to grasp the growth with the whole hand and to test more exhaustively its range of movement in all directions. Whatever the explanation, however, there is no doubt of the fact, and it is one that thoroughly justifies the practice at St. Mark's Hospital of allowing all " borderline " cases to proceed to laparotomy.

Thus in the present series the decision as regards operability in no fewer than 893 cases (of which incidentally 621, or 69.7%, were operable) was deferred till the abdomen had been explored. In only 201 cases was a conclusion reached on clinical grounds alone ; 107 of these were hopelessly inoperable cases (with fixed growths in nearly all, fistulae in 15, palpable enlargement of the liver in 19, ascites in 4, and fixed enlarged inguinal glands in 4), while 94 had apparently inoperable growths, in which confirmation of operability at laparotomy was precluded because the patient refused operation or because the treatment applied was of a restricted nature (e.g., local or perineal excision with " blind " colostomy) not involving exploration of the abdomen.

The part played by each of the three contraindications in determining inoperability will now be examined.

Contraindications to Operability : (a) Fixation of Growth

Fixation was noted in 261 of the inoperable cases. In 169 of them a laparotomy had been done and a definite opinion as to the presence of hepatic, peritoneal, or lymph-gland metastases could therefore be formed ; in no fewer than 97 of these fixity of the growth was the sole cause of inoperability. An incentive is therefore provided for courageous handling of this complication.

The exact situation of the fixation was clearly defined in 174 cases. In 116 of these it was found anteriorly, in 23 posteriorly, and in 14 on the lateral walls ; in 33 cases the rectum was fixed on more than one aspect. The enormous preponderance of anterior fixation is interesting, and is entirely in keeping with preconceived ideas on the subject ; for it has long been recognized that the anterior aspect is the *face dangereuse* of the rectum. It is of course accounted for by the close application of viscera to the front of the bowel, so that a rectal carcinoma readily becomes adherent to them.

Influence of Site of Growth on Operability.—It follows from the above that the site of the growth in the rectal wall ought to have an important influence on its operability. Thus one originating in the anterior wall is early exposed to the risk of becoming adherent to the organs related to this surface, and its operability ought therefore, on the average, to be reduced. This is a danger which does not apply to posterior growths until such time as they have extended circumferentially round the rectum to form completely annular lesions, and their chance of becoming fixed to the sacrum is apparently slight. The operability of growths beginning in the posterior wall should thus be appropriately enhanced. The risk of a lateral growth becoming fixed to the parietes is probably not any greater than that of posterior growths, but the ease of extension to the vulnerable anterior wall would probably slightly diminish the operability of carcinomata arising in this situation. Confirmation of these conjectures is afforded in Table III, which shows the relation between the site of the growth and operability in 1,063 cases in which these points could be correlated.

TABLE III.—*Influence of Site of Growth on Operability*

Site of Growth		Growths in Each Site	Accepted as Operable	Operability Rate
Completely annular	Male	225	110	48·9%
	Female	112	60	53·6%
	Total	337	170	50·4%
Centred on anterior quadrant	Male	165	66	40·0%
	Female	71	42	59·2%
	Total	236	108	45·8%
Centred on one or other lateral quadrant	Male	165	130	78·8%
	Female	60	47	78·3%
	Total	225	177	78·7%
Centred on posterior quadrant	Male	190	157	82·6%
	Female	75	65	86·6%
	Total	265	222	83·8%

Influence of Sex.—Several surgeons have recorded their impression that the operability rate of carcinoma of the rectum is higher in women than in men. and have offered various explanations to account for this difference. A similar variation was observed in the present series; for of 354 women 228 (64.5%) were operable, but of 832 men only 487 (58.5%). It will be noted in Table III that the difference in operability in the two sexes was especially marked in connexion with growths centred on the anterior wall, the higher operability rate for such in women undoubtedly being largely attributable to the greater feasibility, in female patients, of resecting portions of anteriorly related viscera when these are adherent.

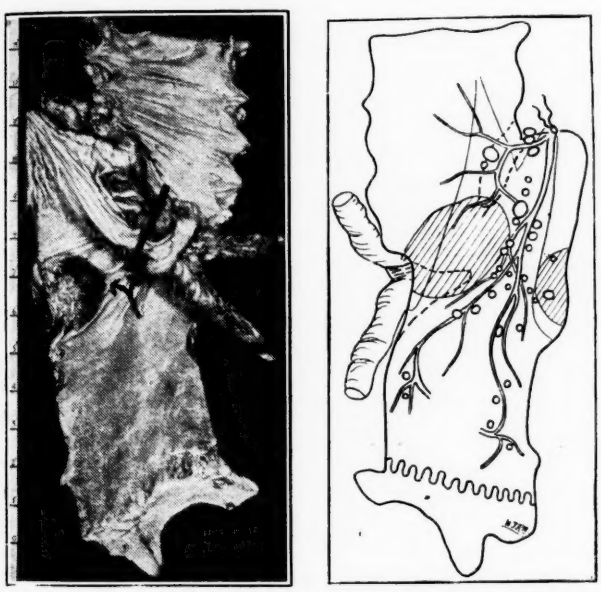

FIG. 1.—Photograph of specimen with lymph-gland dissection from a case of carcinoma recti. A loop of adherent small intestine was removed along with the rectum by perineo-abdominal excision. Histologically the binding adhesion was composed entirely of inflammatory tissue. No lymphatic metastases were seen. The patient unfortunately died with hepatic deposits a year and eight months later.

The Nature of the Adhesions leading to Fixation of the Growth.—Though fixation is brought about by the direct spread of the primary growth, this does not necessarily mean that malignant extension to the adherent structures has occurred. The binding adhesions in many cases are purely inflammatory in character, presumably being formed as a reaction to the advance of the tumour through the rectal wall. Thus a histological examination of 34 operation specimens in which portions of adherent viscera were excised along with the rectum (vagina 20, uterus 3, prostate and seminal vesicles 8, small intestine 3) showed that actual malignant invasion had occurred in only 12 (vagina 5, uterus 2, prostate and seminal vesicles 3, small intestine 2). The moral to be drawn from these observations is that the prognosis in cases submitted to these extended operations is often very much better than was imagined by the surgeon at the time of the excision. Where the general condition of the patient is good and the additional operative strain is likely to be well borne, therefore, the surgeon should not hesitate to employ these methods as a means of increasing the operability of growths adherent on the anterior aspect of the rectum. Fig. 1 illustrates a specimen removed by such an operation.

(b) Hepatic Metastases

It is naturally only in patients submitted to laparotomy that any accurate data are available as to the frequency of the occurrence of hepatic metastases. Of the 893 cases coming to laparotomy, liver secondaries were noted to be present in 103 (11.5%). It must be pointed out, however, that the surgeon's estimate as to the frequency is subject to fallacy. He can only determine the presence of secondaries on the surface of the organ (and not even all the surface at that!). Growths situated entirely centrally must of necessity elude detection. How grave a source of error this may be is illustrated by the following facts:

From 1930 to 1939 inclusive necropsy was performed at St. Mark's Hospital on *31 patients* who had died a few days after perineo-abdominal or perineal excision of the rectum. In all cases a laparotomy had been carried out and the liver surface had been found to be smooth and free from secondary deposits; *yet in no fewer than 5 cases* secondary growths were discovered in the depths of the liver (see Fig. 2). These figures give an incidence of concealed liver secondaries of roughly 1 in 6 in cases coming to necropsy. If these findings obtain for the other cases which were considered at laparotomy to be free from hepatic metastases (790), then as many as 127 of these may have had such metastases hidden in their liver. The total number of cases with secondary involvement of the liver would therefore be raised from 103 (11.5%) to 230 (25.8%). The significance of these buried metastases is that many patients are inevitably subjected to so-called radical excisions when actually the disease has extended beyond the scope of any such operations and has involved the liver. This fact no doubt accounts in large measure for the frequency with which recurrence in the liver is recorded in the follow-up department in patients dying during the first two or three years after radical operation. In such cases the operation has unconsciously been merely palliative; but, quite apart from the impossibility of avoiding the mistake, the operation has probably justified its performance by the greater relief of symptoms than would have been obtained by colostomy alone.

FIG. 2.—Section of liver showing large central metastasis undetected at laparotomy. (From a patient who died one week after a perineo-abdominal excision for carcinoma of rectum.)

In 36 of the 103 cases in which liver secondaries were felt at laparotomy the growth was regarded as locally operable. In 11 of these, as an alternative to colostomy alone, a deliberate palliative excision was performed. In all the 11 cases the patient was in good general condition, and the liver secondaries palpated were very small and usually single, so that, though the liver involvement was almost certainly more extensive than appeared on the surface, that organ was not completely "riddled" with secondaries, and there was a reasonable period of survival to justify the additional risks of this most drastic form of palliation.

(c) Formation of Peritoneal Nodules and Extensive Involvement of Lymph Glands

These two occurrences represent spread of the growth by the lymphatic system. They were noted in 99 of the 894 cases undergoing laparotomy ; in 88 of these cases, however, some other factor, such as fixation of the growth or hepatic metastases, was already present, rendering the condition inoperable. Lymphatic spread cannot therefore be said to play an important part in determining inoperability.

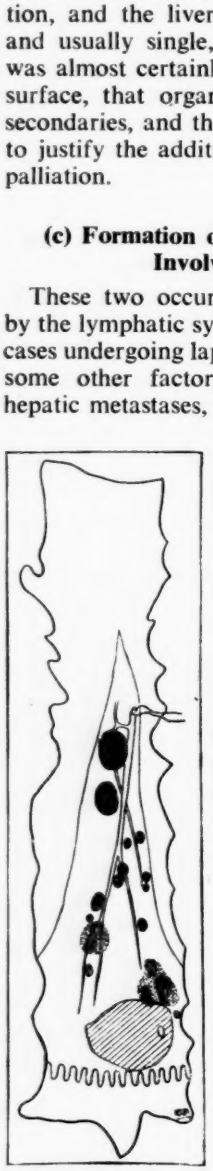

FIG. 3.

Peritoneal nodules or plaques were observed in 62 cases ; they were usually confined to the floor or side walls of the pelvis or to the pelvic mesocolon. In 18 cases, however, extensive transcoelomic spread had apparently taken place, and nodules were scattered throughout the peritoneum, being generally associated with ascites. The presence of any such plaques has in the past been held to contraindicate operation, but recently in a few cases in which the nodules have lain well within the limits of the operation field, and the growth has been otherwise operable, excision has been performed. Sufficient time has not yet elapsed to show whether the attempts at eradication of the disease in these cases have been justified either by success in the primary aim or by the degree of palliation afforded.

The *extent of glandular involvement* is often a difficult matter to assess even at laparotomy. Gabriel, Dukes, and Bussey (1935) have shown that 60% of the enlarged glands in association with rectal carcinoma are swollen purely as a result of inflammatory changes. The only cases in the present series, therefore, that were accepted as inoperable on account of glandular involvement were those (57 in number) in which hard fixed enlargement of glands, such as the para-aortic and internal iliac, provided unequivocal evidence of extension of the growth beyond the bounds of legitimate surgical enterprise.

In this connexion it is interesting to note the results of gland dissection of the operation specimens, which was made in 451 cases. In 231 cases lymph-gland metastases were present, and in 81 of these they extended right up to the ligature on the inferior mesenteric vessels, as shown in Fig. 3. That the involvement has extended to a still higher level in most of these latter cases is indicated by the frequent, almost universal, development of early recurrence. Fig. 3 illustrates an operation specimen from one of Mr. Gabriel's cases of carcinoma of the rectum. It shows widespread involvement of lymphatic glands (affected glands shaded black). The patient surprisingly lived for four years after operation ; and finally died of cerebral haemorrhage.

Choice of Treatment

It will be seen from Table I that a variety of methods have been adopted in the radical treatment of rectal cancer at St. Mark's Hospital. The principle underlying their application has been to employ the most radical operation that the individual patient may reasonably be expected to stand. The method of first choice, at any rate in recent years, has been the combined perineo-abdominal or abdomino-perineal excision. In a number of cases, however, the general condition has not permitted the performance of so severe an operation. It was to patients in this category, with growths of suitable situation and character, that the alternative less drastic procedures were applied. Thus for patients with growths in the lower part of the rectum whose general health has not been good, perineal excision has had a wide sphere of usefulness. Similarly, for growths in the upper third of the rectum it has occasionally been possible to carry out Hartmann's operation when the general condition would have made a combined excision especially hazardous. Finally, for many localized growths of apparent low malignancy in patients in poor condition it has sometimes been possible to use local excision or even radium treatment. Provided they are reserved for such early growths these local removals can be classed as radical operations ; in fact, a number of five-year cures are known to have followed their employment. The value of radium is admittedly less clear.

It may be affirmed, then, that the complementary use of these less radical methods in the manner indicated has played a valuable part in helping to achieve a high operability rate. The particular value of the perineal operation is demonstrated in Table IV, which shows that the operability of rectal cancer was greatest when the growth was situated in the lowest third of the rectum, this being explained by the fact that perineal excision was more readily available for "poor-risk" patients whose carcinomata were located in this segment than for those with growths at a higher level.

TABLE IV.—*Operability of Growths in Various Segments of the Rectum (1,096 Cases)*

	Growths in Each Segment	Accepted as Operable	Type of Treatment Employed			Operability Rate
			Combined Excision	Perineal Excision	Other Methods	
Upper third ..	395	224	161	31	32	56·7%
Middle ,, ..	314	183	95	74	14	58·3%
Lower ,, ..	387	273	59	181	33	70·5%
Totals ..	1,096	680	315	286	79	62·0%

Operative Mortality

The operative mortality for the 321 combined excisions was 60 (18.7%). This figure, however, includes the earliest cases done by this method at St. Mark's Hospital, and is therefore unduly high. The present rate for this operation is just under 10%. The mortality for the 291 perineal excisions was 23 (7.9%). The number of cases submitted to other methods is too small to permit of any accurate statement of mortality. Altogether, of 687 operable cases receiving some form of surgical treatment (including cases whose sole treatment was colostomy or caecostomy) 107 were fatal, giving an overall mortality of 15.6%.

Summary

The operability of carcinoma of the rectum has been analysed in a series of 1,186 cases.

The operability rate for males was 58.5%, for females 64.5%, and for both sexes 60.3%.

In 8% of the cases inoperability was due to the poor general condition of the patient, and in 32% to the advanced state of the growth.

With regard to age, operability was greatest between 40 and 49, and declined in patients older or younger than this.

Inoperability of the carcinoma itself was determined by the presence of one or more of the following conditions: local fixation of the growth, hepatic metastases, peritoneal carcinomatous plaques, or extensive involvement of the abdominal lymph glands. Laparotomy was usually necessary to decide on the existence of these contraindications.

Local fixity of the growth was noted in 23.9% of the generally operable cases, and in 18.9% of the cases that had laparotomy performed. The fixation was usually in front to the related pelvic or abdominal viscera. Growths involving the anterior wall of the rectum were much less frequently operable than those confined to the other quadrants of the bowel. The operability of anterior growths in women was higher than in men. The adhesions producing fixation were usually, but not invariably, inflammatory in character.

Hepatic metastases were palpable in 11.5% of the cases proceeding to laparotomy. The presence of concealed undetected metastases is postulated in another 14.3% of these cases.

Nodules of growth in the peritoneum or extensive involvement of the abdominal lymph glands were noted in 11.1% of cases submitted to laparotomy. These conditions, however, were seldom the sole cause of inoperability.

In endeavouring to secure a high operability rate the importance of having available several radical procedures of varying severity is stressed.

The operative mortality rate for all operable cases having some form of surgical treatment was 15.6%, for cases submitted to combined excision 18.7%, and for those submitted to perineal excision 7.9%.

I wish to express my thanks to the honorary staff of St. Mark's Hospital for permission to undertake this analysis of their cases, to Mr. H. J. R. Bussey for preparing the photographs of specimens and drawings, and to Mr. W. B. Gabriel and Dr. Cuthbert Dukes for their interest, criticism, and advice.

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THE PARASITOLOGY OF SCABIES

BY

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It seems clear that scabies is increasing among civilians and soldiers. This has resulted in so many people inquiring for details of the life history of the itch mite that I venture to publish this account of what is at present known. I have not dealt with the methods of treating the patient or killing the mite, for it is believed that a summary of that side of the subject is in active preparation by other hands.

The correct name of the mite which causes scabies is *Sarcoptes scabiei* de Geer. There are a number of races which occur on different animals (see below), and that on man is known as var. *hominis*.

Appearance

The dorsal surface of the adult female itch mite is shown in Fig. 1. The figure is drawn from a specimen from the horse, but this variety is not distinguishable in structure from that occurring in human beings.

The general outline of the itch mite is oval: it is convex above and flat below, and of a dirty white colour, except the brownish bases of legs, etc. The body is divided into two regions by a constriction between the two anterior and two posterior pairs of legs. The greater part of the surface, dorsal and ventral, is covered with fine transverse folds, which are characteristic of *Sarcoptes* (and of certain related genera of itch mites which occur on domestic animals but not on man); the upper surface bears a number of specialized spines and conical scales.

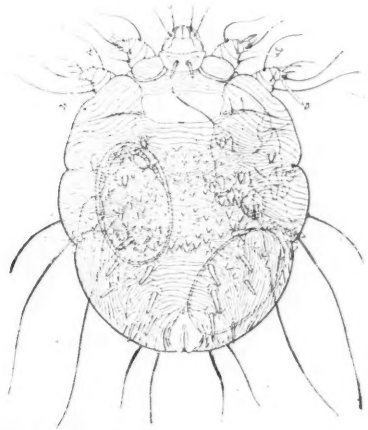

FIG. 1.—Dorsal surface of adult female *S. scabiei* var. *equi*. (From Hirst, 1922.)

The anus is terminal. The legs are short; in the female the first and second legs terminate in suckers (ambulacra) carried on the ends of unjointed stalks; in the male there are similar suckers on the first, second, and fourth legs. The male also differs from the female in the large and elaborate genital organs lying on the ventral surface between the fourth pair of legs. The female is about 0.390 mm. long, the male 0.225 mm.

A full account of the external anatomy of the *Sarcoptes* of the horse (*S. scabiei* var. *equi*) is given by Buxton (1921a). There are grounds for thinking that the mites attacking horse and man are not to be distinguished from one another on anatomical grounds (Buxton, 1921b).

Biology: 1. Life Cycle

The life history of *S. scabiei* is extremely difficult to follow, for the mites are very small and delicate, and much of the cycle is passed beneath the surface of the skin of the host. The best account that we have is by Munro (1919), but there are many points on which knowledge is still most imperfect. According to Munro the adult female, removed from her burrow in the skin, is capable of burying herself completely in man's skin in a very brief period: she holds to the skin by the suckers of the front legs, and elevates her body into a nearly vertical position by using the long terminal bristles of the hind legs. This is generally done on some part of the human body of which the skin is thin. Once the mite is beneath the skin it rests if the man is in a cold place, and continues to excavate its burrow only if his skin is warm, as when he is in a warm room or in bed; it is when the mite is advancing through the epidermis that the itching is felt. It is assumed that the mites feed on the liquid that is available from the epidermal cells which they crush.

A part of the life history of the itch mite may be observed by opening burrows, or by dissecting them from the underlying tissues and mounting them whole (Fig. 2). It can then be seen that the first egg is laid within twenty-four hours of the female's becoming mature. The egg may

hatch in about sixty-five hours; but the period varies (probably with the temperature of the surface of the skin), and the stage may last as long as 100 hours, perhaps even longer. The egg produces an active hexapod larva (Fig. 3), which moults into an octopod nymph: at the next moult this produces either an adult male or an immature female, which has to moult once again to produce an adult female.

The duration of the successive stages is as follows (Munro, 1919): egg, 2½ days or more; larva, 1½ to 3 days; nymph, 1½ to 2½ days; immature female, 2 to 4 days. At

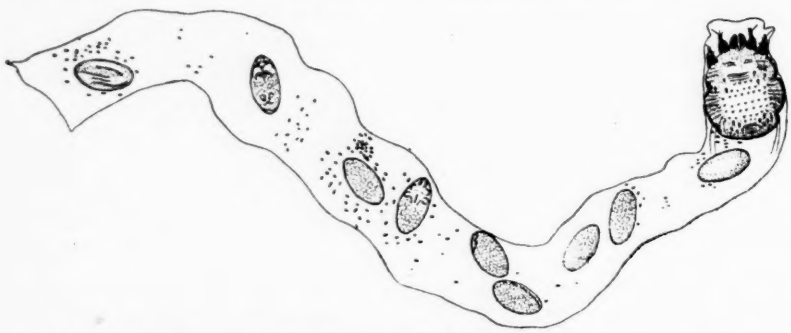

FIG. 2.—Diagram showing adult female itch mite and eggs in burrow in skin. Redrawn by H. S. Leeson, after Munro (1919).

shortest, therefore, the period from deposition of egg to emergence of adult female might be less than eight days.

The larva (Fig. 3) quits the burrow of its parent, in which it hatched from the egg, and makes its own burrow, which may be distinguished by minute vesicles beneath its floor. It seems probable that the nymph makes a separate burrow. Whether the males and immature females wander and make

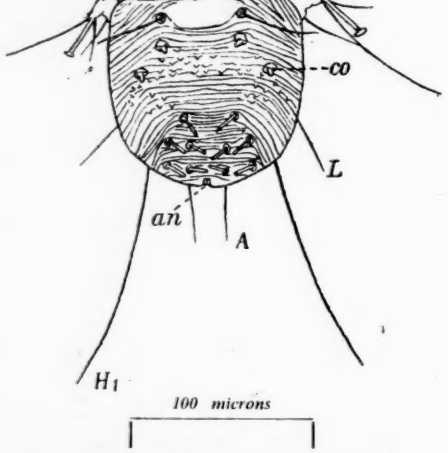

FIG. 3.—Dorsal view of larva of *S. scabiei* (Buxton, 1921a). A, anal seta; *an*, anus; *co*, cone; D_1, first dorsal seta; H_1, terminal seta of third leg; L, lateral seta.

their own burrows or whether they continue in that made by the nymph is not known; but it appears to be well established that the adult female does not normally move, though she can start a fresh burrow if she is forcibly removed from the skin.

The larvae, and perhaps all stages, are sensitive to dryness, and one may suppose that there is a high mortality among those which are wandering over the host's skin or clothes. Even if humidity is high, it is thought that no stage of the mite is able to survive unfed for longer than a few days, though further information would be welcome; according to Munro (1919, p. 21) the isolated larva lives not more than thirty hours if kept moist. It is said that the infestation normally spreads to those with whom the patient sleeps, because the early stages of the mite normally wander about at night. But they are so small (the larva is only 0.15 mm. long) and inconspicuous that they have seldom been seen.

2. Reproduction

The pairing of *S. scabiei* has not been observed. The accepted view (Vitzthum, 1931; Warburton, 1920; and earlier authors) is that the male pairs with the immature female, and that the adult female cannot pair. But it is now thought probable that it is the adult female which pairs, and that the orifice is on a minute papilla on the dorsal surface of the abdomen, not present in the immature female. If this is so the adult female has two genital orifices, for the eggs are laid through a transverse slit, the tocostome, on the ventral side, behind the bases of the legs of the second pairs (Buxton, 1921a).

The life of an individual female has never been followed through, but it seems probable that she lays rather more than two eggs daily, to a total of about forty to fifty.

3. Distribution: Seasonal and Geographical

The itch mite on or in man's skin must be exposed to extremely equable conditions of climate (even more so than *Pediculus*). It is not remarkable, therefore, that it appears to be cosmopolite, and that there is little evidence of seasonal change in abundance; where seasonal changes are observed they may be due rather to the effect of climate on the human beings (who may crowd together in cold weather) than on the *Sarcoptes*. The parasite may occur in people of all ages and races.

No information exists as to the upper temperature that is fatal for various periods of exposure. Disinfestation of blankets, etc., by heat is at present based on faith alone, and probably the temperatures used are needlessly high.

4. Hosts

It has been known for three-quarters of a century that mites very similar to the *S. scabiei* of man occur on many sorts of mammal, causing itching and mange. These mites have been recorded from the domestic horse, dog, pig, sheep, goat, camel, llama; also from a number of wild animals, among others the wolf, polecat, fox, lion, capybara, but generally from individuals kept in captivity. The earlier authors figured and described points of difference between *Sarcoptes* from different species of mammal, and their work was summarized by Warburton (1920): it is now held that the differences recorded are due to imperfect microscopes and technique, and that the anatomical characters are variable or non-existent. Hirst (1922) states that he has examined specimens from a large number of species of mammal, domestic and wild, "without being able to find a constant morphological character by which they could be satisfactorily distinguished from one another." I myself made a full study of the external anatomy of the *Sarcoptes* of the horse, and then examined much material collected from human beings: the conclusion reached was "that the *Sarcoptes* of the horse and the common species found on man cannot invariably be separated. Certain minute differences exist in scales and spines, but they are not constant, and the measurements overlap" (Buxton, 1921b). No species of *Sarcoptes* occurs on birds.

As it seems that itch mites from man, the horse, and many other animals are not separable on anatomical points, though they differ physiologically, it is convenient to treat them all as belonging to a single species, *S. scabiei*. But as there is a high degree of specificity (see below) one would say that there are biological races associated with particular hosts. It is customary to speak of these varieties as *S. scabiei* var. *hominis* on man, var. *equi, canis, suis, ovis* on the horse, dog, pig, and sheep, and so on for other varieties.

5. Source of Human Sarcoptes

As we have no anatomical points by which *Sarcoptes* from different animals can be recognized one can only use the epidemiological method in studying the extent to which man may derive his infestation from other mammals. It is quite clear that one human being is normally infested from another: the itch generally spreads through a family, or a group of men living together, in the absence of infested animals. The condition is much more frequent in people who live crowded together and who have no opportunity of washing, changing clothes, etc. Moreover, experimental transmissions are on record: scabies has been transmitted to volunteers who used the underclothing or beds of infested people, or who wore gloves inside which *Sarcoptes* had been liberated (Munro, 1919; Macpherson, Horrocks, and Beveridge, 1923).

But though man generally derives his *Sarcoptes* from other human beings there are many records in which his infection was clearly traced from animals: such cases are often detected by veterinary surgeons. The disease seems to be not rare among those who keep small pet dogs, which can sleep on the bed or the lap, but it is rarer among those whose dogs are larger and less easily handled.

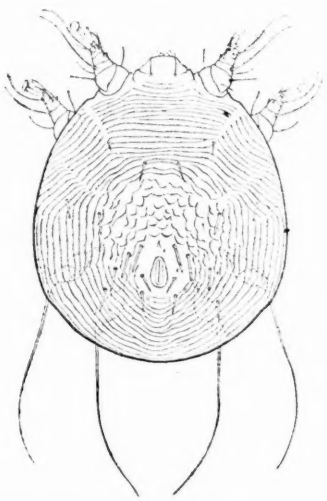

FIG. 4.—Dorsal surface of adult female of *Notoëdres cati*. (From Hirst, 1922.)

It also seems probable that more human infections are derived from the horse than from other animals. The case described by Macdonald (1922) is instructive: a group of students spent periods of from two to five hours studying the dead body of an infested horse: all those who had direct contact with the horse suffered from itching and a papular eruption. In a similar way, men whose work brings them into contact with cattle or camels suffering from sarcoptic mange commonly acquire an infection; there are also records of its spreading to keepers in menageries from diseased llamas, kangaroos, chimpanzees, and other animals. The disease is therefore to some extent an occupational one among those whose pleasure or profession it is to breed dogs, nurse cats, milk cows, groom horses, tame lions, box with kangaroos, or tend llamas. (Recent references: Sequeira, 1925; Whitfield and others, 1931. See also Warburton, 1920, for references to earlier authors.) A useful short account of the mites infesting domestic animals is given by Hirst (1922).

The mite *Notoëdres* (*Notoëdrus*) *cati*, parasitic on cats and rabbits (and less commonly dogs), occasionally produces infestation in cat-lovers. *Notoëdres* is distinguished from *Sarcoptes* in its small size, the dorsal position of the anus, and other characters (Fig. 4).

The severity of scabies acquired by man from animals differs greatly with circumstances: in some instances the irritation is felt very soon after the mites have reached the skin—within an hour or so in some of the students described by Macdonald (1922). Mites derived from the camel appear to be particularly irritating; indeed, it is said that Roberts's famous march from Kabul to Kandahar in 1880 almost broke down owing to sarcoptic mange in the camels and in those who looked after them. It is also thought that some of the cases of crusted scabies in man may have been derived from animals (see below). It seems that the biological races of *S. scabiei* which are proper to animals are not able to establish themselves on man, and that in many cases they make no complete burrows; moreover, the original human patient is not, apparently, a source of danger to other people. This specificity of different biological races of the mite is very marked, and it has proved difficult to infect one sort of animal from another by transferring mites and crusts. To what extent human beings suffering from *S. scabiei* var. *hominis* are a source of infection to domestic animals is not known.

Medical Importance: 1. Scabies

Scabies, or "the itch," is a specific disease caused by the presence of *S. scabiei* in man's skin. It seems that a period of eight to ten days commonly passes between the beginning of an infestation and the development of symptoms, and that period may be longer, perhaps much longer, in insensitive patients. The itching, which is the most noticeable symptom, is not caused by the presence of the mite in the skin, but by its activity in extending its burrow; it is therefore most troublesome when the patient is in bed or in a warm room.

The burrow (Fig. 2) is made in the deeper part of the horny layer of the epidermis, rarely reaching so deep as the granular layer. In sections it may be seen that the epidermis round the mouth of the burrow is oedematous. The layers of epidermis below the burrow are also frequently oedematous, with dilated lymphatics. A vesicle may be present beneath the burrow (perhaps only when the burrow is that of a larval mite—see above). In the papillary layer the blood capillaries are dilated and surrounded by inflammatory exudate. The burrow is tortuous and may reach a length of 5 to 15 mm.

Scabies is best diagnosed by finding the burrow or the mite. In a European the burrow may appear grey because its rough upper surface catches dirt and because of the faeces of the mite within it: one may make it more evident by brushing ink over the skin. It is generally agreed that the burrow is difficult to see in a brown skin. The mites will generally be found in the burrow, more rarely on the surface of the skin. Backhouse (1929), working with dark patients in Melanesia, reports finding the mite in 35% of 424 cases. It is sometimes very important to detect scabies—for instance, in order to prevent its spread through labourers in the Tropics or troops under active service conditions: failure to diagnose the condition is common. There is also a tendency in the damp Tropics to take scrapings from the skin and grow from them various fungi, which

fascinate the dermatologist and may prevent his discovering the common humdrum mite.

The infestation may be on almost any part of the body, and mites confined under watch-glasses will burrow wherever they may be. But the parts most commonly affected are those where the skin is soft or folded, as at joints.

On the clinical side one may distinguish simple scabies, in which the irritation is due to the burrows, and complicated scabies, in which the symptoms are aggravated by septic complications. Common complications are impetigo and the dermatitis which follows the unwise use of sulphur ointment. The proportion of complicated cases depends on conditions of life and the care given to diagnosis and treatment.

2. Crusted Scabies

Clinically this is a well-defined condition, thick crusts and callosities being found on various parts of the body, especially the limbs. The crusts, which are stratified, may project 2 to 3 mm. above the surface of the skin: large areas of skin may be involved and the finger-nails be included. Enormous numbers of *Sarcoptes* of all stages live in the crusts, but they are quite capable of burrowing in the normal way (Backhouse, 1929; and Fig. 5).

FIG. 5.—Section of skin from case of crusted scabies. Note great thickening of stratum corneum, and numerous burrows and spaces in it containing mites and eggs. Malpighian layer shows proliferation and mites lying deep in it in capsules of semi-cornified epithelium. Drawn by H. S. Leeson from a photograph by Backhouse (1929).

Generally the condition requires at least a year for its development. The accumulation of crusts, consisting of dead epithelium and dried exudate full of itch mites, renders it very much like sarcoptic mange, such as one sees in the horse. The disease is generally rare; most authors remark on the fact that the cases are isolated, one only being seen in many years.

The condition was originally described among lepers in Norway, and it is sometimes referred to as "Norwegian crusted scabies." This name is unsuitable, for the disease has been recorded from most European countries, and Turkey; also from several tropical countries, such as Brazil, French Guinea, Melanesia, and Java.

With respect to the epidemiology diverse views are held. Many authors regard the disease as normal scabies which has been neglected, perhaps because it occurs in an insensitive or very careless patient: the fact that it sometimes occurs in lepers, whose skin is so often anaesthetic, supports this view. Moreover, Beatty (1915) described a case seen in Dublin in which the infection was attributed by the patient to his having slept a year before in the same bed as a person suffering from ordinary scabies. This view is supported by Pozzo (1920) and Mandoul (1925). The view that crusted scabies is nothing more than ordinary scabies much neglected is also held by Backhouse (1929). Some of his cases were mild and localized common itch; others were generalized; others, again, carried masses of crusted exudate full of *Sarcoptes*: the conditions graded into one another. Material collected by Beatty in Dublin has been carefully compared with a large number of mites derived from human cases of common scabies. It was found that the mites were separable only on one character—the length of the spines on the posterior part of the body; but the differences were small, and as the spines are curved they are not easy to measure (Buxton, 1921b). It would be difficult to say whether the small differences might be attributed to the conditions under which the mites live beneath the scales of crusted scabies.

The alternative view, that the mites in crusted scabies are derived from animals and are completely different from those in the ordinary disease, was held by several of the earlier authors, including Mégnin, who attributed certain cases to infection derived from wolves. More recently Brug and Haga (1930) have reported on mites derived from crusted scabies in a Chinese leper seen in Java. It is clear that their mites differed in several important characters from those which cause the ordinary disease, and it is perhaps significant that the same authors examined mites from a tame monkey, finding them identical with those from the human case of crusted scabies. In a case observed at Rio de Janeiro the mites differed from those of ordinary human scabies: it was thought that they must have been derived from an unknown domestic animal (da Costa Lima, 1927).

It seems, then, that crusted scabies may be produced in two ways. Sometimes, perhaps most often, it is ordinary itch occurring in an insensitive or neglected individual. Other cases are due to infection with *Sarcoptes* derived from animals. Both views are supported by the evidence. The third possible view, that the disease is peculiar to man but essentially different from common scabies, is not tenable because of its rarity and its tendency to appear as single cases.

Figs. 1 and 4 are reproduced from Hirst's *Mites Injurious to Domestic Animals*, by permission of the Director of the British Museum (Natural History). Figs. 2 and 5 are redrawn by my colleague Mr. H. S. Leeson from the figures of Munro (1919) and Backhouse (1929). Fig. 3 is reproduced by permission of the editor of *Parasitology* (Cambridge University Press).

Summary

The paper deals with the external anatomy and life history of *S. scabiei* var. *hominis*, the causative organism of human scabies, and its relation to man. Destruction of the mite and treatment of the host are not discussed.

The mite is a specific parasite of man, and can live for only a short time away from him. It can go through its cycle from egg to adult in a minimum of eight days. It seems probable that two types of burrow are made—one by the larva, with a vesicle in the floor, and the other (the larger and more familiar type) by the nymphs: it is in this second type that adults, eggs, etc., are found (Fig. 2).

Normally the itch is derived from another human being. But man is occasionally infested by the *Sarcoptes* of horse, camel, etc., which appears to set up a transient form of itch.

Crusted scabies is sometimes due to prolonged neglect of ordinary scabies. There are, however, some cases which are probably due to infestation by *Sarcoptes* from some host other than man.

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TREATMENT OF SCABIES
USE OF SULPHUR LATHER TABLETS

BY

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The increase in the incidence of scabies, started well before the war, has now become a wartime problem. Among the school population, where information of a non-notifiable disease is easiest to find, scabies increased 90% in Heston and Isleworth, 100% in the North Riding of Yorkshire, and 50% in Coventry, in 1938. These figures are pre-war, but it is legitimate to assume that conditions which caused such an increase then will have caused a still greater increase in wartime, for the war has exaggerated many of those conditions. One of the chief reasons before the war was, as stated by Sir Frederick Menzies, the fact that "children who have been treated return to homes where other members of the family are untreated and reinfection is frequent." This fact is surely the basis for the alarming increase. Scabies is a curable disease; the remedies are varied, but the majority are effective sarcopticides. Given an isolated case of scabies few practitioners will fail to cure it in a week. The cure of the individual case is relatively easy, and yet the disease remains one of the most difficult to control, and is at present assuming the proportions of an epidemic.

Anyone dealing with scabies on a large scale will acknowledge that the more cases we cure the more we find to cure. It seems feasible, therefore, to deduce that the disease is increasing because: (1) supervision of contacts is not given the same importance as the treatment of active cases; (2) 50% of the cases never seek treatment and thus constitute a reservoir from which fresh cases are always arising. The majority of individuals in this reservoir of untreated cases are those who escape medical supervision in schools, factories, and industrial concerns—children below school age who elude the rather infrequent visits of the health visitor, mothers and female relations who do not work outside their homes, and children above school age who do not come under medical supervision at work. Medical supervision would have much reduced the incidence of the disease had it not been for these untreated cases. The importance of control of the contact is increased by the fact that the war has caused a dispersal of the family unit. A family which before the war kept its scabies more or less to its own house now carries it to the Army, the air-raid shelter, and the reception area. The soldier home on leave takes his wife's scabies back to the barracks, the school child returns to the reception area with the baby's scabies, and the "bombed-out" family crowd in with neighbours or in a communal shelter, and the acarus, if present in clothes or bedding, spreads rapidly. Shelter life and, indeed, all conditions of overcrowding, too often associated with personal uncleanliness, fewer baths, fewer washdays, all provide excellent facilities for the increased spread of scabies.

Infection is by contact. This must be close contact with an infected person's lesion or with his infested clothing, and must be long enough to allow the acarus to pass from one person to another and to establish itself by burrowing in the skin. Thus infection will result from sleeping in the same bed as an infected person, using infested blankets—for example, in the Army, the shelter, or the crowded house—or wearing an infested person's clothing; it is possible that in some cases infection passes from clothing to clothing. Infested clothing remains infective for at least eleven days (Gray, 1940).

Importance of Effective Treatment

Scabies, which is frequently venereal (Roxburgh, 1939), is often regarded as a trivial disease, and is put with "nits" into the class of normal affections of some of the poorer people. This is unwise, for the importance of scabies lies in the fact that while it is never a life destroyer it causes much loss of sleep—an important fact nowadays. The cardinal symptom is intense irritation at night-time. The scabietic child, unless inured by months of reinfection, is pale, listless, heavy-eyed, and dull, not, of course, only because of his scabies but because of loss of sleep and his perpetually irritating skin condition. Similarly, we can ill afford to let the war worker spend his days and nights scratching, with a resultant increase in nervous tension, lack of concentration, impairment of efficiency, and eventually loss of working time.

The ideal treatment must be: (1) short and effective to reduce the period of infectivity; (2) palatable to the patient, who often has to be cajoled into continuing with it: and (3) must include all contacts and clothing. The futility of treating the school children and neglecting the contacts is expressed by Macdonald (1941): "The usual means of dealing with scabies by treating the children with clinic baths and instructing the mothers is not only inadequate but in the vast majority of cases is a futile expression of hope." On the other hand, the effectiveness of dealing with case and contacts together has been proved in Canada (Currey, 1939). On the day of diagnosis of a case of scabies the health visitor treated the case and all the contacts of school age in their own homes with benzyl benzoate lotion. All were excluded and followed up in twenty-four hours. Advice was given to the parent and lotion left for the remaining members of the family. In this way the incidence of scabies was, during the first six months of 1939, twelve families out of a school population of 5,569. This is an interesting record, for although only school-age contacts were treated, yet incidence of scabies among the schools fell to a very low figure.

A New Method of Treatment

I have recently used a new method of treatment on children of all ages in a school treatment centre. In a small series of cases this was agreeably successful, and I think it is justifiable to add yet another to the list of sarcopticides, for this one has certain advantages over others I have used, especially in children. This treatment was first described in America (Nolan, 1937). The active principle is sulphur—the old favourite. This is incorporated in a bland soap—amount of sulphur being 18%—which is applied to the body in the form of a lather. As the lather dries a thin film of sulphur is deposited all over the body. Nolan had noted that on looking at a bubble of the lather

the finely divided granules of sulphur could be seen, and as the bubble burst these granules were deposited on the skin. It was estimated that 4 grammes of the soap were needed to cover the body with a lather, whereas 85 grammes of sulphur ointment were commonly used. Nolan estimated the equivalent of sulphur as 0.72 gramme against 12.8 grammes. This meant not only a saving of material but less likelihood of sulphur dermatitis, as the amount of sulphur used was so much less. Working on Nolan's principles, I used, instead of a soap, a tablet in which the amount of sulphur suggested as adequate—that is, 0.72 gramme—was incorporated with a lathering agent. This was thought advisable for several reasons. Scabies baths are often given by untrained persons, and with a cake of soap it is as possible as with an ointment to use too much and cause a dermatitis. I used these tablets on twenty-nine unselected cases of scabies at a school clinic. In the majority of these the baths were given by V.A.D.s on my instructions.

FIRST SERIES OF NINE CASES

Procedure.—(1) Each child was given a hot bath; five were scrubbed with a nail-brush or harsh flannel and four were bathed clean without friction. (2) Child removed from bath and lathered all over with the tablet, a foam being produced by rubbing the tablet between the nurse's wet hands. (3) Lather allowed to dry; this took about five minutes in a warm bathroom. (4) Clean vest put on. (5) Procedure repeated on two successive days. (6) Verbal instruction given to the parent about boiling the clothes and sheets.

Result.—Cases seen seven days after last bath; all cured. Average number of applications, three; average duration of treatment, four days. No cases of dermatitis.

SECOND SERIES OF TWENTY CASES

All children were given the treatment as outlined for the first series, but no one received more than three applications, as I thought this should be sufficient. Ten were scrubbed and ten were washed in hot water before lathering, four receiving their treatment at home. The majority were given ung. zinc. *B.P.* or calamine lotion to apply for the week following the last bath. This I found advantageous, as the skin often showed excoriations and scratch marks, although the scabies was cured. The ointment rubbed well into the skin promoted healing and prevented the child from scratching the tags of dead skin. It is notoriously difficult to make children attend regularly for baths, and in this series the longest time taken to give the three applications was five days.

Result.—Out of twenty cases two defaulted. Eighteen were given three applications; all cured seven days after the last bath. One case of dermatitis. This child was seen to have a patch of urticaria on his abdomen at the follow-up inspection. No sign of dermatitis was seen during treatment, and in my opinion this was not a sulphur dermatitis; it cleared with calamine lotion in three days.

Comment.—The lathering method of applying sulphur has been used fairly extensively in America. I have found it in a very small series of cases to be a nearer approach to the ideal for children than either ung. sulph. or benzyl benzoate lotion. It is effective, as sulphur always has been, and the chance of dermatitis seems to be very small; moreover, by giving the patient three tablets treatment can be carried out at home without the fear of an excessive application by the zealous-minded. It dries quicker than a lotion and has none of the "messy" qualities of an ointment. Scrubbing before the application is probably necessary, or at least advisable; I found scrubbing was not necessary for children, in whom a hot bath and rub down with a flannel is generally sufficient to open the burrows. None of the children complained of pain after the lathering, even those with raw or septic areas.

Table showing Details of the First Series of Nine Cases

Case	Age	Sex	Degree	Complications of Disease	Duration of Treatment	Scrubbing	Previous Attacks (Recorded)	Complications of Treatment	Remarks
1	10	M	Moderate; abdomen, hands, and feet	None	1.2.3.	Yes	Baths at clinic with ung. sulph. since Nov. 1939	None	Attendance of this boy was very irregular before trial with sulphur lather. He was constantly getting reinfections
2	8	F	Severe; abdomen, back, and wrists	Septic burrows on wrists	1.2.3.	Yes	Several recurrences	None	Cured in 3 days with 3 baths
3	13	M	Moderate; abdomen round umbilicus, fingers	None	1.–2.3.	Yes	None	None	Brother of Case 4. Cured in 4 days with 3 baths
4	11	M	Severe; trunk, thighs, and feet	None	1.–2.3.4.	Yes	None	None	Brother of Case 3. Cured in 5 days with 4 baths
5	10	M	Slight; hands only	None	1.2.	Yes	None	None	Cured with 2 applications
6	8	M	Very severe; numerous burrows all over back, abdomen, thighs, and forearms	Septic burrows	1.–2.3.–4.	No	One recorded attack in Jan., 1939	None	Brother of Case 7. Cured in 7 days with 4 applications
7	5	M	Same as Case 6	Same as Case 6	1.–2.3.–4.	No	None	None	Brother of Case 6. Although this child was not scrubbed he opened most of the burrows by scratching
8	11	F	Severe; abdomen, buttocks, and forearms	Some areas of sulphur dermatitis on abdomen	1.2.3.	No	None	None	Scabies for 4 weeks before seen at clinic. Treated at home with paste of sulphur and lard after hot baths (no scrubbing). This, no doubt, accounts for sulphur dermatitis when first seen
9	12	M	Mild; abdomen and between fingers	None	1.2.	No	April, 1940	None	Cured after 2 applications. Reviewed 7 days later—still clear

Cases grouped into mild, moderate, and severe.
Duration of Treatment.—Each application of sulphur foam is numbered 1.2.3., indicating three applications on three successive days. If a day is missed it is denoted thus: 1. – 2.3., indicating that the child did not attend on the second day so had its second application on the third day.

Comparison with Other Treatments

Sulphur Ointment: Ung. Sulph. B.P.—This is the traditional treatment for scabies, and I have used it on children for some time. Its effectiveness is indisputable, but it is not my treatment of choice, for three reasons: (1) The use of any ointment spread thickly over the body means that underclothing and bedding become soiled by the grease. This, combined with its rather pungent smell, makes the treatment objectionable to many people; their satisfactory co-operation is difficult to obtain. (2) There is the likelihood of sulphur dermatitis if the ointment is used too thickly or too frequently. Sulphur dermatitis associated with scabies is not only very difficult to cure but also often difficult to diagnose. (3) All the burrows

must be opened by preliminary scrubbing, otherwise the ointment cannot penetrate. Although this is impressed on the patient he often neglects it and so makes the treatment only partially effective.

Benzyl Benzoate Lotion: Equal Quantities of Benzyl Benzoate, Soft Soap, and Methylated Spirits.—This lotion I have used on children at a school clinic. In any case with open sores or septic infection of the burrows the lotion proved too painful. Application of soap and methylated spirits to a raw area was more than most children could bear, and I found that this factor alone nullified its effectiveness as a sarcopticide. Regular attendance at a treatment centre is difficult enough to get with a non-stinging application; it is well-nigh impossible with a "burning lotion"! Reference to the literature shows, too, that erythema of the skin, oedema of the prepuce and scrotum, and conjunctivitis have been noted in adults.

Benzyl Benzoate Cream.—Recently, in order to overcome the stinging effect of the lotion, benzyl benzoate has been incorporated in a cream (Touraine and Leroux, 1938). I have not used this preparation because it is much more expensive than the other sarcopticides. Published reports show, however, that it is an improvement on the lotion from the point of view of the "burning," and is also quick-drying.

Marcussen's Ointment: Ung. Pot. Polysulph. B.P.C., or Kathiolan.—I used this preparation on evacuated school children. It is said to be effective in twenty-four hours; also that the incidence of sulphur dermatitis is small. Among my cases three applications were usually necessary; I had no cases of dermatitis. But this treatment has, like ung. sulph., the disadvantages of being an ointment and therefore "messy" to use.

Sodium Thiosulphate 25% with Hydrochloric Acid 5%; Rotenone Lotion.—I have not used either of these preparations, but as they are present-day remedies I have appended references to them.

Conclusion

A new method of applying sulphur is outlined and compared with other modern methods of treatment. In my experience a really satisfactory treatment for scabies is a step on the way to control of the disease, in that it makes cure of the active case more certain. But the basic problem lies not in finding a cure for the active cases but in preventing the rapid spread of the disease, and this means control and treatment of contacts and control of the reservoir of the untreated. This is no easy matter, for it involves inspection of every member of a family in which a case of scabies has occurred; the efficient treatment or supervision of them as soon as the case has been diagnosed; and immediate disinfestation of all clothing and bedding. Even if applied only to children of school age this plan would be effective in reducing materially the incidence of scabies.

I should like to express my thanks to Dr. C. Metcalfe Brown, medical officer of health for Middlesbrough, for permission to publish this investigation, and to the Glaxo Laboratories for supplying me with the sulphur lather tablets.

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SCABIES TREATED BY A BENZYL BENZOATE EMULSION

BY

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The increase in the numbers of cases of scabies which has been reported from widely separated parts of the country (Gray, 1941; Corfield, 1941; Harris, 1941) presents us with a problem of considerable complexity and of no little importance to the maintenance of the sustained national effort demanded at the present time. Prolonged loss of sleep or the disturbed sleep produced by the almost intolerable pruritus in many cases cannot fail to have a deleterious action on the capacity of the worker, the efficiency of the soldier, and the morale of all, civilian and soldier alike. As Percival (1939) has said: "Under war conditions the consequences of the disease may be serious from a military point of view."

That this parasitic disease may become rampant throughout the country is obvious when one remembers the nucleus of infection known to exist in almost every industrial area, and considers the movements of population that are taking place now and which will increase as industrial mobilization gains momentum. Control of sufferers and adequate supervision of billets, with particular attention to those known to have been occupied by infected persons, are imperative, since "transmission takes place by sleeping with an infected subject or in an infected bed or by the wearing of infected clothes" (Parsons and Barling, 1933). In view of special acquaintance with scabies in children I would add the handling of infected articles, such as books or towels, by the school child and the conveying of the infection by him to an as yet scabies-free household. This is perhaps the most frequent means of spread under peacetime conditions, and it is not without significance now. A feature of the group of cases recently treated by us, with results summarized below, is the relatively high proportion of families with no history of previous infection.

This communication is an account of the results obtained from the first 100 cases treated with a benzyl benzoate emulsion ("proscabin," Bayer), and for comparison there is included a short survey of the last 100 cases of scabies treated by the sulphur inunction method. We feel that the urgency of the question and the undoubted advantages of this latest form of treatment justify the publication of the results of even such a limited group of cases. All cases were treated as notified and diagnosed and without any selection. The classification adopted was based on the distribution and extent of the disease and not on its character, whether burrows or vesicles or a follicular papular eruption predominated. Slight or early cases were marked such, and particular attention was paid to those having severe secondary infection—a relatively small number.

Outline of Treatment

Each patient received a hot bath and the body was well lathered with soap and scrubbed. The skin was dried and proscabin was brushed on to the whole body surface from the neck to the toes; parts badly affected received a second painting immediately after the first had dried. The previously worn clothing was then put on. Bath and painting were repeated on the second day and clean underwear used. Parents were advised to have bedclothes changed and disinfested. Two days later the child was examined, and when treatment had been successful it was usual to find that

scratching had ceased and that the areas of skin most involved looked dull and brown in contrast to the bright pinkish points normally distributed freely in the scratched areas. Each child was re-examined after four days and again a week later. Subsequently the number of examinations was curtailed by omitting the second. The crusted or pustular areas of secondary infection were treated with a 1% ammoniated mercury ointment, after completion of the proscabin treatment. Under the procedure now in operation a child can be pronounced free from infection on the fifth day after diagnosis—that is, three days elapse between the signing of the exclusion form (school) and the issue of a return-to-school certificate, on two of which days proscabin is being applied. If a second course is deemed necessary the child can be passed fit for school on the ninth day. These results compare favourably with Canadian experience (Ministry of Health Memorandum, 1940). All cases are, of course, being observed one week later as a precautionary measure (Table I).

TABLE I.—*Benzyl Benzoate Cases*

Group	Number of Benzyl Benzoate Courses	Distribution of the Infection			Totals	Having Secondary Infection	Later Sulphur Inunction	Previous Infection with Scabies	Number of Defaulters
		Trunk and Limbs	Limbs Only	Slight Cases					
I	1	40 (57·1%)	10 (83·3%)	17 (94·4%)	67 (%)	4 (%)	13 (%)	9 (%)	2 (%)
II	2	26 (37·2%)	2 (16·7%)	1 (5·6%)	29 (%)	6 (%)	4 (%)	13 (%)	0
III	3	4 (5·7%)	0	0	4 (%)	0	0	0	1 (%)
Totals		70(%)	12(%)	18(%)	100	10(%)	17(%)	22(%)	3(%)

It will be noted that the group requiring one course comprised 67% of the total cases treated; 29% required two courses before being pronounced free from infection; while four cases (4%) were given three courses. The proportion of cases given two courses is higher than it might have been because a misunderstanding on the part of the nurse attendant led to the omission of the preliminary bathing in about twelve cases. Most of these were early and mild, and it was the failure of cure to take place immediately—an expectation based on earlier experience—which led to the omission being discovered.

Twenty-five of the Group II cases were classed as not cured after one course of proscabin, and four were regarded as possible reinfections, recurrence taking place after an interval of one week or more. In this connexion I would like to emphasize the importance of having the everyday outer garments disinfested as well as underwear. Recurring infection of the thighs and groin from trousers (usually worn without underpants in most of our cases) and of the wrists from dirty and contaminated sleeves is of particular importance among poor children who have one suit of clothes only.

It will be noted further that seventeen cases of the one hundred treated were given sulphur inunction subsequent to benzyl benzoate. The ointment was applied solely to the cases in which itch continued, and only to the parts which are known to be particularly resistant to treatment and to be likely to harbour residual infection—namely, the thickened papule-ridden folds at the wrists, elbows, ankles, and groin. Thirteen of Group I cases (19.4%) and four of Group II cases (13.8%) were given such additional treatment. It is probable that a second course of benzyl benzoate might have cleared a number of those in Group I without the assistance of sulphur ointment, and we are proceeding along these lines now. The incubation period of the ova being three to three and a half days (Gray, 1933), it is not unlikely that, if any ova remained viable within the thickened skin, larvae might appear after the completion of the single course of benzyl benzoate. Sulphur ointment was therefore prescribed as a prophylactic and precautionary measure.

I have already mentioned that quite a number of the cases which came under observation were from previous scabies-free households; these amounted to 88% of the total. The remaining 12% had had anti-scabies treatment within the preceding two years, and some were the victims of repeated attacks. In the group receiving only one course of benzyl benzoate there were nine cases (13.43%), while in the smaller Group II there were thirteen cases, or 44.82% of the group. These habitual sufferers formed almost half of the group which required two courses; they are the most difficult to cure and the most prone to reinfection. Default was practically negligible, only three cases being recorded. Two of these were due to intercurrent infection (mumps); the third patient was unwilling to attend after initial treatment.

Sulphur Inunction Cases

For comparison with the above and with particular reference to the length of time required to effect cure I include a brief summary of the last 100 cases treated by the sulphur inunction (ung. sulph. 5%) method. These cases are arranged according to the length of time between exclusion from school on account of scabies and the issue of a return-to-school certificate (Table II).

TABLE II.—*Showing Length of Time to Effect Cure with Sulphur Inunction*

Distribution of Infection	Cured within One Week	Cured within One to Two Weeks	Cured within Two to Three Weeks	Cured within Three to Four Weeks	Requiring Four or More Weeks	Prolonged Absence (Illness, etc.)	Recurrences with Distribution of Infection			Totals
							1st Infection	2nd Infection	3rd Infection	
Trunk and limbs	7	16	17	12	15	6	11	10	1	84 (%)
Limbs only	6	5	4	0	0	0	1	2	1	16 (%)
Totals	13(%)	21(%)	21(%)	12(%)	15(%)	6(%)		12(%)		100

It will be seen that only 13% of this series were reported fit to attend school after one week's treatment, as compared with 67% of the benzyl benzoate group, an as many as 15% were still uncured four weeks after diagnosis. These results cannot be used as a valid criticism of the efficacy of sulphur inunction, but they illustrate the difficulties of this method for out-patients who are receiving voluntary treatment and of whom many are apathetic and non-co-operative. As an indication of the position ten children in the "two to three weeks" group received no treatment on eight days or more of that period, so that in addition to week-ends without treatment each of these was absent on several days at least, usually irregularly and quite often at the most active stage of the treatment. Default during treatment reached even higher proportions in the "three to four weeks" and in the "four weeks and over" groups. Irregular attendance at the clinic, principally due to the dislike many of the children have for this rather greasy and odoriferous treatment, and the prolongation of the course which default entails, are responsible for the deplorable figures that we have to record. That our experience is not unique is suggested by the recent Rotherham view that "the usual method of dealing with scabies . . . is not only inadequate but is, in the majority of cases, a futile expression of hope" (MacDonald, 1941); while Potts, referring to his cases in Yorkshire, complains also of the difficulty of obtaining thorough treatment in the early stages of infection (*Medical Officer*, 1940). With regard to the

twelve recurrences recorded, all took place after an interval of one month or more from cessation of treatment for the previous attack ; one case had had two previous attacks.

Conclusion

In my opinion the introduction of the benzyl benzoate treatment is an important advance in the treatment of scabies, and it is particularly valuable where large numbers are infected. The ease and speed with which the applications can be carried out, the absence of unpleasant effects apart from a temporary prickly sensation during the painting process, the rapidity of cure, and the almost immediate relief from itching combine to make it a satisfactory remedy from both the clinical and the public health aspects.

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THE TRANSMISSION OF SCABIES

BY

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There has been a good deal of controversy concerning the way in which scabies is transmitted. Much importance has been attached to blankets, and an extreme view is expressed by Lydon (1941), who says that, at least in the Army, "it cannot be stressed too strongly that blankets are the chief means of spread of scabies infection, and unless strict control is instituted cases will continue to appear in their present numbers." The view that blankets are a common method of transmission is widely held in the Army, and the first reply made to the medical officer by the scabies patient when questioned concerning infection usually suggests that blankets were concerned—even from men recently on leave to homes ridden with the disease. On the other hand, certain workers, particularly those in France, have considered that scabies is primarily spread by personal contact, and have suggested that it may be considered as a venereal disease. Working under controlled conditions, Munro (1919) has shown that scabies may be transmitted by fomites, but his results do not indicate how often such transmission is likely. The experiments described here are part of an investigation to find out exactly how the disease is normally transmitted.

These experiments were made using volunteers who lived under controlled institutional conditions and who were subjected to different types of contact with scabies infection. The volunteers were all pacifists who had offered to co-operate in this work and who, during the experiments, received board and lodging and a weekly payment similar to that which they would have received had they been called up for military service. They agreed to submit themselves to infection and to allow the course of the disease to be followed on their persons. Throughout the experiments the volunteers co-operated loyally, and I have had no reason to suspect that all instructions were not always conscientiously carried out. The expenses of the investigation were paid by the Ministry of Health.

Experimental Work

Fomites.—The volunteers were put in contact with blankets and underclothing previously used by scabies patients. Care was taken to use fomites only from patients about whom there was no doubt of the diagnosis of scabies. Where bedding was used it had normally been in contact with the patient for several weeks, and for the last twenty-four hours before transfer the two inside blankets in contact with the patient were the same as those subsequently in contact with the volunteer. In most of the experiments using blankets alone the volunteer was naked so as to ensure contact. The volunteer never bathed for a period of at least a fortnight after the beginning of an experiment ; and later, when it was felt that it might be a disadvantage for him to start with too clean a skin, bathing was prevented for a further week before the experiment started. Bedding and underclothing were used by the volunteers for a period of seven days, the bedding being slept in at night only, whereas the underclothing was worn continuously, day and night. In the earlier experiments the blankets and underclothing were kept for periods of several days under conditions of known temperature and humidity. I hoped thereby to discover how climatic conditions influenced the infectivity of the materials. When a dozen or more experiments had been made without infecting the volunteers it was thought best to work under conditions which would appear to offer the maximum chance of infection. The results obtained in all these experiments may be summarized as follows :

(*a*) Volunteer used blankets one to seven days after they had been used by scabies patient: 6 experiments, all negative (i.e., no volunteers infected).

(*b*) Volunteer used underclothing two to seven days after it had been used by scabies patient: 6 experiments, all negative.

(*c*) Volunteer used bed immediately it was vacated by scabies patient: 19 experiments, all negative.

(*d*) Volunteer used underclothing immediately after it was removed from scabies patient: 32 experiments—30 negative, 2 *positive* (i.e., 2 volunteers became infected).

The men were stripped and inspected daily for a period of about a month (sometimes longer) after each experiment. The inspection took several minutes, and any suspicious lesions or areas in which irritation was felt were scrutinized with a high-power lens or a binocular microscope. Although work at present in progress shows that in some cases at least seven weeks may pass before *clinical* signs of scabies develop in an infected volunteer, some signs of infection are always visible to careful inspection at an earlier date, and, considering the care with which the daily inspections were carried out, I do not think it would be possible for any inspections to have been missed. Furthermore, the same men were used throughout the whole series of experiments, so that a slowly developing case would have eventually been detected.

Personal Contact.—When two infected volunteers were at last obtained it became possible to test the effects of personal contact. On four occasions uninfected volunteers slept together in the same beds as these men suffering from scabies. The scabies patients both had a general infection of the body (this was two to three months after their contact with infected underclothing), and the disease would probably have been detected at a routine inspection such as is commonly held in the Services, but the degree of infection was very much less than that usually seen in patients coming for treatment. The men wore pyjamas during these experiments. In three instances the volunteer and the infected man slept together for seven nights, and mites were found on all three volunteers after periods of

eight, nine, and twelve days from the start of the experiment. In a fourth case the volunteer slept for two nights under the conditions described above and did not develop the disease.

Conclusions

In 63 experiments using underclothing and blankets scabies was transmitted twice only, although everything was done to favour transmission. In none of the experiments (25 in all) using blankets alone was infection transmitted, and I think we are justified in assuming that under normal conditions blankets can seldom be responsible for the transmission of the disease. On the other hand, a small number of the experiments have shown that transmission by comparatively slight personal contact may be readily accomplished.

I believe that scabies is normally transmitted by personal contact either of a slight or of a venereal nature. There is no doubt that small children are often the first members of a family to be infected ; the way in which children play with their arms around each other's necks suggests an easy means of transmission. Children then probably infect their mothers, who pass on the scabies to the father. An investigation of scabies in the Army shows that while a large number of cases may be traced to infection on leave, some other cases are due to illicit intercourse. It is difficult for an Army medical officer to obtain this information from a soldier, but it is possible to find out a good deal from resident patients by means of suitably chosen orderlies, to whom the patients will discourse more fully concerning their experiences. There is very little evidence to suggest that in this country scabies is being commonly spread from man to man in the Army.

One reason for the importance that is attached to fomites in scabies transmission is that lice are well known to be spread by this means, and as both scabies and pediculosis are parasitic diseases it might be expected that transmission would occur in a similar manner. As, however, the itch mite lives beneath the skin of the host during the major part of its life, and the body louse lives on his clothes, only going on to the body to feed, it is not surprising that considerable difference should exist.

The evidence given here is not sufficient to enable us to say that disinfestation of clothing and blankets is unnecessary in cases of scabies, though this conclusion seems quite probable. I hope that it may be possible for other workers, particularly public health authorities, to obtain more extensive evidence. I may add that in many cases where reinfection has been attributed to fomites one of three possibilities has not always been excluded :

1. Contact with another case of scabies (a person who is once infected is likely to continue to have the same contacts, with continual risk of infection).

2. Incomplete cure, which may take several weeks to manifest itself.

3. Certain lesions remain visible and irritant for weeks after cure, and unless living parasites are found it is dangerous to consider that a reinfection or relapse has actually occurred.

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G. D. Kettelkamp and W. W. Stanbro (*Amer. Rev. Tuberc.*, 1941, **44**, 104) state that two identical male twins were admitted to hospital with a history of common initial symptoms of pain in the left chest, cough, and expectoration. Both were treated by artificial pneumothorax. The clinical course was similar, both patients developing laryngeal tuberculosis. Both died, and the necropsy showed in each tuberculosis of the lungs, larynx, intestines, liver, and spleen.

Medical Memoranda

Carotene Preparations as Substitutes for Vitamin A Preparations

Dr. H. Steenbock of Wisconsin, U.S.A., in 1919 and Prof. Hans von Euler of Stockholm in 1928 associated the carotenoid pigments of plants with vitamin A activity. The matter was settled by Dr. T. Moore of the Nutritional Laboratory, Cambridge, when he showed that yellow carotene fed to animals is converted into the colourless vitamin A found in liver oils. There are several carotenes and allied pigments, and of these β-carotene is the most effective for the formation of vitamin A, because one molecule of β-carotene plus a molecule of water can give rise to two molecules of vitamin A. A molecule of the other carotenes can be converted into only one molecule of vitamin A. Therefore it has been assumed that the carotenes can be used as substitutes for vitamin A.

In wartime, when there is a shortage of protective foodstuffs of animal origin rich in vitamin A, dietitians urge an increased use of foodstuffs rich in carotenes, such as carrots, green leaves, red palm oil, etc.

Recently attempts have been made in India and Ceylon to find substitutes for cod-liver oil, and it has been proposed to use products of red palm oil (*Elaeis guineensis*).

A new preparation has been made in Madras: it is a thick cloudy oil of a deep orange colour, and contains 516 γ per gramme of carotene, reckoned as β-carotene. It has been submitted to the following limited test in Ceylon.

Fifteen children in an orphanage who showed marked or very marked signs of phrynodermia were divided into three groups of 5 each. The first group were given approximately 30 grammes of the preparation ; the second group received 30 grammes of unstandardized cod-liver oil daily ; and the third group were used as controls. The children were examined weekly, and the result at the end of six weeks was as follows: 3 of the first group showed some improvement and 2 showed none ; 4 of the second group were markedly improved, with considerable clearing up of the phrynodermia, and 1 was slightly improved. None of the control group showed any improvement. All the children received portions of the same diet.

Many children with phrynodermia have been treated with capsules of a fish-liver oil concentrate, each of which the makers guarantee to contain "not less than 9,400 I.U. of vitamin A activity." It has been our experience that, with a few exceptions, phrynodermia clears up in children in about three weeks when they are given three capsules daily. The international unit of vitamin A activity is 0.6 of β-carotene, and the amount in the new preparation given daily to each child was approximately 26,000 units reckoned as β-carotene. Even assuming that much of the carotene was in the form of α- and γ-carotenes the children were receiving a very considerable amount. Incidentally, although the cod-liver oil was far more effective than the preparation, it does not seem to have been of a very high standard.

Discussion

Little is known concerning the absorption of carotenes from the alimentary tract or of their conversion into vitamin A in the healthy body, and still less is known of their fate in the body under conditions of disease. There may be little doubt that a healthy adult on a vegetarian diet can obtain a sufficiency of vitamin A from the carotenes of the diet ; but it does not necessarily follow that this applies to the infant or the growing child. There is a high incidence of signs of vitamin A deficiency among the poorer-class children of Ceylon, and this is especially so among the younger children and those being weaned to a more or less vegetarian diet. It seems as though the metabolism of the child's body does not quickly or readily pass from the utilization of vitamin A as it occurs in the mother's milk to the utilization of carotenes by converting them into vitamin A.

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Fatal Cases of Poisoning with Sodium Nitroprusside

The following cases are worthy of record in view of the chemical compound which was the cause of death.

CASE I

The patient, a second-year probationer nurse aged 23, had had vague abdominal pain suggestive of chronic appendicitis in July, 1940. This settled down, but recurred in February, 1941, and she was to have been examined by a surgeon on February 13.

During the night of February 9 she had an attack of vomiting, but on the following day was apparently perfectly well. On the 12th she attended a lecture from 11 a.m. to noon, and at 1.15 p.m. she was heard to call out and was found leaning against the wall in one of the lavatories in the nurses' home. She was put to bed: her colour was poor, the temperature was 95° F., the pulse rate 132, and the respirations 26. She was able to answer questions, but was drowsy and had difficulty in concentrating. The pupils were slightly dilated; the conjunctival reflexes were present. She was transferred to hospital, where a diagnosis of a fit or poisoning was made. The stomach was washed out by 2.20 p.m. At 2.25 p.m. she was unconscious, and respiration gradually became slower and more laboured. At 2.45 p.m. the pulse rate had fallen to 45, the pupils were fully dilated, and trismus was present. After the stomach lavage there was some frothing at the mouth and nose. The patient remained unconscious, and she was placed in a Drinker respirator. She died at 3.45 p.m.

At the post-mortem examination the dependent parts of the body showed the characteristic bright pink coloration seen in cases of poisoning by hydrocyanic acid. There was a little frothy mucoid material in the trachea, and the upper lobes of the lungs were oedematous. The stomach contained a small quantity of partially digested food which had a definite smell, but this was not distinct enough to be identified with certainty as the smell of bitter almonds. The mucosa of the stomach, duodenum, and upper few inches of the jejunum was slightly congested, the congestion fading from the stomach to the jejunum. The vessels of the liver and kidneys were congested. As poisoning by prussic acid was not suspected no attempt was made to detect any smell when the skull was opened, and later no particular odour was noticed. Nothing else abnormal was seen except congestion of all the organs.

Analysis showed traces of hydrocyanic acid in the stomach contents, but the amount was very small, less than 1/3 grain. Sodium nitroprusside was found principally in the stomach contents but also in a specimen of vomit and in the stomach washings, the total amounting to about 6 grains. It is proposed to make a separate communication to the *Analyst* giving details of the method of analysis used.

CASE II

This case occurred at Rochester in 1936, but no details have hitherto been recorded.

A young surgeon was found dead in a hospital dispensary on a Monday morning, poison having been taken and death having occurred apparently on the Sunday afternoon. The case was complicated by the fact that a large dose of arsenic had been taken before the nitroprusside. Actually arsenic equivalent to over 45 grains of sodium arsenate and sodium nitroprusside amounting to over 400 grains were found in the stomach contents and viscera. Between 3 and 4 grains of hydrocyanic acid were present in the stomach. At the post-mortem examination the organs were all found to be congested. It was suggested that death must have taken place very quickly and that the arsenic played no part.

We are indebted to the matron of the hospital and to the member of the honorary staff who was called in for the clinical details of the first case.

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Reviews

AETIOLOGY OF CHOLELITHIASIS

Studies on the Etiology of Gallstones. A Subtilis-like Bacilli Group as an Etiologic Factor. By Karl Mártensson. From the Department of General Pathology at Karolinska Institutet, Stockholm. *Acta Chirurgica Scandinavica*, vol. lxxxiv. Supplementum lxii. (Pp. 227; 74 illustrations.) Nordisk: Rotogravyr.

Dr. Karl Mártensson of Stockholm has done a bold thing in publishing his *Studies on the Etiology of Gallstones*, for the discoveries which he has made are of the kind which has sometimes ultimately to be written off as a mare's nest. He began by tracing statistically a connexion between certain general disturbances and gall-stone formation, but concluded that these rather control the composition of the stone than determine its original formation, and therefore began a search for a local cause. Since the nucleus of a gall-stone often contains epithelial cells, inflammation accompanied by desquamation might well be the first stage of the process. The cause of this inflammation is identified as a spore-forming Gram-positive bacillus which can be demonstrated by special methods involving solution and sectioning of gall-stones as forming part of their stroma; it has also been demonstrated in the mucosa of the gall-bladder. It was cultivated from 33 out of 78 specimens obtained at operation or necropsy, more often from the stone itself than from the bile, never from the bile without also being present in the stones, and in no case from bile in the absence of stones. It was also found in the faeces of 5 out of 25 cases of cholelithiasis. The majority of strains of these bacilli were aerobes, and are therefore to be placed in the genus *Bacillus*, though their characters, which appear to be fairly constant apart from the small group of anaerobic organisms also recovered, are not exactly those of any named species in this genus. The inoculation of sterile bile with this organism was followed by acidification and cholesterol precipitation. Various other bacteria were also found in some of these specimens, but the newly described bacillus differs from them all in the fact that animals inoculated with it develop gall-stones. Not only did this occur in numerous animals of several species besides the obliging rabbit when the bacilli were introduced into the gall-bladder itself, but in some animals gall-stones were also formed after intravenous or subcutaneous inoculation, the addition of the bacilli to drinking-water, and even their insertion into the vagina before parturition. Further, rabbits immunized against the organism were thereby protected against cholelithiasis following inoculation into the gall-bladder. These animal lesions and the findings in human cases are profusely illustrated. No adequate criticism of such work as this is feasible in a small compass; we only feel that the facts should be stated in order that others interested in the subject may apply the author's methods, and either confirm, modify, or refute his conclusions.

PHYSIOLOGICAL REVIEWS

Annual Review of Physiology. Volume 3. Edited by James Murray Luck and Victor E. Hall. (Pp. 784. $5.00.) Published by the American Physiological Society and Annual Reviews, Inc. 1941.

The third year of publication finds this annual volume considerably augmented in size and in value. It is beyond question that our American friends have a genius for this sort of thing—collections of reviews on those branches of any subject that are of special present-day interest. This series of reviews on physiological topics made itself a place in the world's literature on physiology when the first volume

appeared, and the steady increase in the proportion of the world's physiological literature that is being published in the English language is sufficient proof of the dominance of our tongue in international scientific circles. The place formerly held by publications in German is steadily being taken by journals in English, and a majority of these come from the United States of America. The present volume is a good illustration of the type of review for which in the past Germany was held in proper esteem. Its contributors are of high repute, and the volume is an invaluable key to the current thought and investigation in the subject. Its outlook, in so far as present circumstances permit, is international, though the abundance and proximity of American work naturally make their influence felt.

It is impossible adequately to review that which is itself a very compressed review. It may be stated, however, that the bibliographical references alone form a complete and valuable survey of what is going on; the text is a sort of running commentary on this, and the index of names and subjects is exhaustive—another good feature of American publications. The following is a bare list of the contents, which shows how wide the net is spread: The Relation of Bioelectric Potentials to Cell Functioning (G. H. Bishop); The Physiological Effects of Radiant Energy (H. Laurens); Physiological Aspects of Genetics (A. H. Sturtevant); Developmental Physiology (E. Witschi); Growth (C. E. Palmer and A. Ciocco); Temperature Regulation (J. C. Scott and H. C. Bazett); Energy Metabolism (T. M. Carpenter); Respiration (C. F. Schmidt and J. H. Comroe, jun.); Physical Properties of Protoplasm (E. F. Adolph); Muscle (W. O. Fenn); The Digestive System (J. E. Thomas); Liver and Bile (W. B. Hawkins); Formed Elements of the Blood (G. M. Higgins); Heart (C. J. Wiggers and H. D. Green); Peripheral Circulation (V. E. Hall); Electrical Activity of the Brain (H. H. Jasper); The Autonomic Nervous System (D. Sheehan); The Special Senses—I. Hearing (E. Bárány), II. Visual Receptors (R. Granit), III. Vibratory Sensations and Pain (Y. Zotterman); Physiological Psychology (H. S. Liddell); Kidney (L. Leiter); Metabolic Functions of the Endocrine Glands (S. Soskin); Endocrine Aspects of the Physiology of Reproduction (O. Riddle); Reproduction in Mammals (M. H. Friedman); Bacterial Chemotherapy (E. K. Marshall, jun.); Histamine and Anaphylaxis (W. Feldberg); Exercise (A. H. Steinhaus). There can be not only very few physiologists, but also very few of those engaged on any branch of medical research, to whom some of these articles would not be valuable. The paper is matt and restful, and the type and get-up of the best.

DISEASES OF THE SKIN

Modern Dermatology and Syphilology. By S. William Becker, M.D., and Maximillian E. Obermayer, M.D. (Pp. 872; 461 illustrations in text, 32 full colour plates. 65s. net.) Philadelphia, London, Montreal: J. B. Lippincott Company. 1941.

Every professor of dermatology in America appears to think it his duty to write a textbook of skin diseases, and here is one from the University of Chicago. The authors have very rightly attempted to depart from the familiar pattern of the dermatological textbook and state that they have sacrificed comprehensiveness to a fuller discussion of those diseases which are commonly seen in the English-speaking world. They have also tried to adopt a style such as that used by a lecturer speaking to students rather than that of a compiler of an encyclopaedia.

A special feature of this textbook is a chapter on the neurodermatoses, among which are included the numerous varieties of pruritus, idiopathic chronic urticaria, alopecia areata, lichen planus, rosacea, and (rather curiously) vitiligo. But it appears that this disease is included among the neurodermatoses not because it is caused by neurovascular instability but because in hypersensitive individuals it gives rise to unhappiness and neurosis. The authors also think that there is some possibility of preventing the extension of the affected area by ultra-violet rays and eau-de-Cologne. Most dermatologists will think that this is an unduly sanguine view to take. Our authors attempt to treat their patients suffering from these neurodermatoses on neurological or rather, perhaps, psychological lines. They emphasize the importance of regular and sufficient holidays, the daily nap and sunshine, natural if possible, but if not, artificial. They claim that they are more successful than the majority of physicians in dealing with this class of patient. Our authors also make a brave attempt to differentiate between the various types of eruption which are all commonly herded together under the old appellation of "eczema." In one important series of cases they follow the teaching of Kreibich, who brought forward evidence of disturbance of the cutaneous nerves, and they designate these cases as neurodermatitis, which may be either dry or exudative, and they state that such patients very rarely exhibit hypersensitiveness (or "allergy") on the application of patch tests. Their views are worthy of careful study.

Altogether this is a good textbook of dermatology; it is written in an attractive style, and, like all modern American books, is well printed and produced. A useful feature is the presentation of various subjects in tabular form, which enables the reader to get a clearer idea of the problem than he might otherwise. Among matters so treated are the causes of drug eruptions, of the chief occupational diseases of the skin, the methodical treatment of syphilis, etc. The main drawback to this book is its price, which is high, especially for students, but apart from that one may say that it is worthy of the university whence it emanates.

Notes on Books

The speedy demand for a new edition of Sir ARTHUR HURST'S *Medical Diseases of War* is the best evidence of its excellence. It has been thoroughly revised, and in view of the spread of the war to the Middle East the chapter on amoebic dysentery has been reintroduced from the 1918 version of this work, together with a new chapter on malaria from the pen of Colonel H. B. F. Dixon. Colonel Stott has contributed a new chapter on meningococcal fever, and shortly before his lamented death Dr. T. A. Ross wrote a postscript to his article on anxiety neuroses, of which he was such an admirable and successful therapist. Emphasis is also laid on digestive disorders, which have unexpectedly proved to be one of the most important medical problems of this war. Altogether a most useful book. It is published by Edward Arnold and Co. at 18s.

The Fire Protection and A.R.P. Year-Book 1941-42 is a kind of Whitaker of the fire brigade. It includes an alphabetical list of all the fire brigades and salvage corps of the kingdom, with full statistical details of equipment and operations. A directory of A.R.P. officers for every authority is another useful feature, and so is an epitome of the legislation affecting the fire service. The statutory rules and orders relating to fires are given, together with particulars of the standard specifications for A.R.P. equipment. The surprising amount of technical information embodied in this volume goes to show that fire-fighting is no longer a haphazard business but a science and discipline. One of the ironies of events is that all the records for this year-book with the material set in type were lost during the fire raid on London at the end of last December. But the data have been reassembled, and the result is a compilation which is useful to all engaged in civil defence, but particularly to those called upon to deal with the menace of the incendiary bomb. It is published by Lomax, Erskine and Co., Ltd., of Aldwych House, W.C.2, at 7s. 6d. post free.

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TREATMENT WITH BACTERIOPHAGE

The American Medical Association, among other valuable services rendered through its journal, sometimes commissions a report by recognized authorities on the status of some form of treatment. Such a report on bacteriophage treatment, by M. D. Eaton and S. Bayne-Jones,[1] appeared in 1934, and at that time we referred editorially[2] to the cautious and, indeed, somewhat sceptical conclusions to which these authors were led. It is now considered that a further review of the position is necessary, and this has been prepared by A. P. Krueger and E. Jane Scribner,[3] whose full and thoroughly documented account of more recent work on bacteriophage is a valuable source of information apart from the conclusions they draw from it. Seven years of further work enable this review to begin with a statement of the nature of bacteriophage, and an analysis of the mechanism of its action and the factors controlling this.

Bacteriophage is not a micro-organism but a protein of high molecular weight formed from a precursor within the bacterial cell. For lysis to take place a concentration of about 100 phage units per cell is necessary. Well-founded calculations enable the concentrations attainable in a lesion by therapeutic use to be assessed, and it immediately becomes clear that even after direct application the lytic threshold is unlikely to be reached. Systemic administration assumes—in so far as therapy is based on any such reasoned assumption at all—"a chemotactic affinity of fantastic proportions between phage and pathogen," an affinity of which in fact there is no evidence. It has been found in animal experiments that phage given intravenously is rapidly removed from the circulation by the reticulo-endothelial system. But apart from loss of activity by dilution and sequestration, phage applied in any way to a bodily lesion has to operate in a medium immeasurably less favourable than a tube of culture medium. Its activity is known to be greatly impaired by the presence of dead bacteria, which adsorb it irreversibly, by leucocytes and leucocytic extracts, and by serum. These are exactly the materials of which an inflammatory exudate is composed. Thus local circumstances in the diseased tissue are "practically without exception inimical to the process of bacteriophagy." Hence it is concluded that however phage preparations may act in the body—and it is not denied that sometimes they may act—lysis of bacteria as seen *in vitro* is not the mechanism. The accepted theoretical basis of phage treatment is thus fallacious. It is also deliberately concluded that the spontaneous development of phage plays no part in natural recovery—a most important decision, setting aside an attractive hypothesis which has captivated popular medical imagination in connexion with several diseases.

What, then, are the other effects which phage treatment may produce? There is another possibility involving a direct action on micro-organisms—namely, that in the presence of phage bacterial dissociation may occur, leading to the production of less virulent variants. That this may happen *in vitro* is known; to what extent it occurs in the body is doubtful, and an opposite effect—the production of variants of greater virulence—is a possibility of which at least one example is said to have been observed *in vitro*. There is also evidence of several kinds that phage may act as a stimulus to phagocytosis. The other effects which phage preparations undoubtedly may have all depend on impurities. The preparation is a lysed bacterial culture, and therefore contains, as well as phage itself, constituents of the bacterial cell in solution, any products of bacterial growth, and the remaining constituents of the culture medium. The intravenous injection of such a hotch-potch of materials has an entirely non-specific action in inducing a leucocytosis, and perhaps in stimulating the mechanism of resistance in other unspecified ways. But the preparation also contains the antigens of lysed bacteria, and these are calculated to excite the formation of specific antibodies. It is quite possible that bacterial antigens in this form have a more rapid and perhaps even a greater immunizing power than a suspension of the intact bacteria from which they are derived—that phage is in fact merely a means for producing a more efficient bacterial vaccine. Each of these arguments applies not only to systemic administration but to local application. Whatever view may be taken about local immunity in Besredka's sense, there is no doubt that applications of this sort to the tissues cause a reaction which is protective against infection, if only by causing leucocytic infiltration. In these authors' opinion "phage lysates in general should be agents *par excellence* for developing local immunity, since they contain several of the individual materials known to be active in this direction: it is our opinion that much of their therapeutic efficiency can be ascribed to this mechanism."

The second part of their paper is devoted to an assessment of clinical results in various conditions: here the plain facts of experimental study are exchanged for a maze of varied observations strongly coloured with therapeutic enthusiasm, forming altogether a prodigious haystack in which to seek the needle of truth. Its main subdivisions are intestinal diseases, infections of the urinary tract, superficial or local septic infections, and septicaemia. It would be neither feasible nor profitable to review in any detail the conclusions reached on this aspect of the subject. They are in any case mainly indefinite; nothing more can be said, taking reported results as a whole, than that they are suggestive of good effect. The disease for which the evidence of this is clearest is thought to be cholera. Here it should of course be remembered that conditions in the bowel are relatively free from those obstacles to phage action which are combined in concentrated form in pus. It is granted that there is clinical evidence of the immunizing and other actions by phage preparations which have already been set down as theoretically to be expected, but ques-

[1] *J. Amer. med. Ass.*, 1934, **103**, 1769.
[2] *British Medical Journal*, 1934, **2**, 1110.
[3] *J. Amer. med. Ass.*, 1941, **116**, 2160, 2269.

tioned whether these preparations excel or even necessarily equal products more specifically designed for the purpose, such as staphylococcus vaccine or toxoid and typhoid vaccine. Though it is often argued that phage preparations are at all events harmless, this is not entirely true: severe reactions have been seen which can be attributed to the presence in them of bacterial toxins or of the Duran-Reynals spreading factor. The whole of this admirable survey should have a healthy effect in a sphere of therapeutics which cries out for clearer thinking and more judicial study.

SELECTION FOR THE ARMY

Those who can recall the procedure of medical boards charged with examination of Army recruits during the last war will agree that methods have now greatly improved. The 1914-18 recruit was seen by two, or sometimes three, medical men, and the total time spent on examination, including eyesight test, in a case which presented no obvious difficulty was perhaps ten minutes. This sufficed to grade a man from A1 to C3 or to reject him entirely. The medical boards now consist of five medical practitioners, who altogether examine as a rule from 25 to 30 men during a session of two and a half hours. Each doctor sees each man for approximately five minutes, so that the full examination of one recruit occupies not much less than half an hour. The chairman of the board decides on the final grading and also whether the man should be sent to a specialist. The Select Committee on National Expenditure in its twenty-second report (H.M. Stationery Office, price 2d.) states that the examination as now conducted is fairly thorough, although there is still evidence that some physically unfit men are passed as fit. Even the extended time given to examination does not allow of any careful diagnosis to determine whether certain men who are strictly above the minimum standard are nevertheless likely to be of real use to the Army. The acceptance of unfit recruits is, of course, not only a personal misfortune to the men concerned, but may involve the State in large liabilities for pension and compensation. The committee believes that the present system leads to waste of public money and man-power and should be revised in accordance with modern medical and psychological experience, though it does not indicate the nature of the revision beyond suggesting that the boards would be much assisted in their work if they had past histories before them, especially the recruit's health records from the approved societies. Lack of uniformity between medical boards, shown by the type of man passed in one case and rejected in another, is mentioned.

The present report, however, is chiefly critical of the allocation of man-power once it has passed into the Service—not the occasional acceptance by the Army of medically unfit men, but the assignment of men to military occupations for which they are mentally ill adapted. This, with characteristic ignorance, is made the basis of an attack upon the medical profession in one of the more popular daily newspapers. Actually it is not a medical responsibility at all. After the medical examination the recruits who reach the required standard of physical fitness are interviewed as to their preferences, and those not accepted for the other Services appear before the Army interviewing officer, who makes recommendations, generally on meagre data, as to the unit to which each man should be sent, and once sent it is very difficult to get him transferred to a unit more appropriate to his capacity. The committee suggests that when a man is called to attend the medical board his mental level should also be ascertained, so that men falling below a certain standard in this respect might be identified before being allocated to any branch of the Service. After receiving an intelligence grading they might be passed on to a depot for a probationary period where they would be further tested for vocational or other aptitudes. Some comments are made by the committee on the relation between age and proficiency in the Army. While the older men of military age have the advantage of greater experience, this is to a certain extent offset by relatively poor hand-and-eye co-ordination. Young men have proved of special value owing to their quickness of thought and action and also their greater physical fitness. It was stated in evidence before the committee that men of 18 and 19 are the most physically fit and mentally alert members of the community. The German authorities have been alive to this fact in the Hitler Youth Movement, in which youths of 17 are being given six months' intensive mechanized training. With regard to selection of officers the committee holds that while officers should, as a rule, be chosen from those whose intelligence as measured by tests reaches a certain level, the qualities essential to an officer cannot be ascertained solely by testing; therefore the system of reports by commanding officers on the suitability of men to be entered as cadets should be continued along with intelligence tests.

The system of selection by testing is new to the British Army, and could only be yielding its fullest value at the present time if it had been introduced ten or twenty years ago. In the unnatural selection of wartime there must be innumerable square pegs in round holes, but with the enrolment of men of higher ages and with more experience in every kind of civilian occupation, which is now taking place, it becomes imperative in the national interests, as well as in the interests of the men themselves, to ensure that their allocation to Army jobs is in some way related to their mental and physical capacity. The danger of enlistment at random of the mentally defective has lately been discussed in these columns. A paper by Dr. F. J. Esher opened the subject on August 9, and in some editorial comment upon it we raised the question whether a group intelligence test should not be used as a routine in all recruits. Intelligent personnel with some appropriate training could administer them, the assessment being left to the psychiatrists and trained psychologists. By such means the militarily useless and the unstable types of defective could be excluded and the stable types of higher grades allocated from the beginning to the kind of work for which they are fitted. It is not only important to avoid the insertion of square pegs into round holes, but everything possible should be done to reject rotten pegs of whatever shape.

HEALTH EDUCATION IN THE SHELTERS

Nearly a year ago Lord Horder pointed out that the air-raid shelter situation affords an opportunity for a new health education policy with a promise of success such as was never possible under pre-war conditions. Heavy bombing has deeply stirred the pool of social life; it has changed the nightly habitat of multitudes of people many of whom have had little or no experience of a well-ordered and hygienic community. The need and opportunity for education in health, in the care of children, in family diet, and in decent living standards and behaviour is written large across the shelters. How badly this education is needed is shown by the hundreds of noisy children who frequent them, the condition of the bedding, the state of cleanliness of parents and children alike, the misuse of lavatories, and the wilful damage and pilfering of which local authorities complain.

In the large shelters indirect education has been proceeding for a year now through the presence and example of doctors, nurses, and voluntary workers attached to social welfare organizations. The local authorities have also done much by providing sanitary facilities (in some instances washing facilities also), planned canteens, and medical aid posts. A governing factor in the situation is the popularity of the large public shelters as against the domestic or communal ones. People naturally insist on going where there are light, warmth, movement, social life, canteen, entertainment, and medical help. The small shelters, communal and Anderson, are used only by people who leave their homes if there is an "alert" or perhaps if heavy raiding is in progress. Shelters were designed, of course, to afford safety, but their successful use depends on certain other factors as well. There are instances where the authorities have been compelled to "build a shelter round the people" who insisted on a particular place because, perhaps, they had used it in the last war, or their neighbours used it, or they "thought it was safe." There is evidence of the continued use of condemned and forcibly closed shelters. One such was seen in the East End. The authorities had actually bricked up a certain railway arch on two occasions, but each time the bricks were pushed down by a crowbar and the people took possession, although there were very good shelters only a stone's throw away. People like the shelters where they "feel" safest, where there are a large number of their fellows, and where amenities are available, and these facts have to be recognized. The people who spend their time in the shelters would normally go to the cinema or a club or a pub: now to a large extent denied these social opportunities they will be more ready to learn of the possibilities of a new kind of social existence after the war. This is primarily a doctor's business, because only against a background of health knowledge can any real progress be achieved.

The educable material is there, but it will have to be carefully and judiciously handled. People should be encouraged (not discouraged, as they too often are) to take their children, and their own slight injuries and ailments, to the doctor and nurse in attendance. Those who are instructed to go to their own doctor or to clinic or hospital for treatment should be followed up to see that they do so. Again, to mention three specific instances, the methods followed by the Rev. W. E. Sangster of the Westminster Central Hall, to whom the Westminster City Council has given oversight of a number of shelters, the Rev. Father Groser of Stepney, and pacifist and similar organizations in various parts of London, are worthy of study. The practice of these workers is actually to live in the shelters, share the life of the shelterers, run the medical aid post and canteens, and introduce recreative and educational influences. Shelter life, with all its hygienic hazards, affords an unrivalled opportunity for health education. This is the time to instil the principles of mothercraft, proper feeding, and a sufficiency of rest, and to deliver from the spoon-fed stage the people who have hitherto been satisfied to let the school medical service or the public health authorities do everything for them. The shelters where there is such leadership are unmistakable. If full advantage is taken of the opportunity a new pattern of community living may well take shape in these subterranean refuges that will be of incalculable value when the people once more come to live fearlessly in the light of day. No praise can be too high for the voluntary workers in the shelters. Indeed, they have received the highest of compliments, because wherever they have started something which is practical and necessary in any department of shelter life the authorities have had to recognize it.

The many thousands of pounds which have been spent in London and the big industrial cities on large air-raid shelters should surely be viewed as an investment for the post-war era, not merely as an amelioration of wartime conditions. Many of these places could be used as clinics, clubs, and gymnasiums when their present function is ended, though no one imagines that these great dormitories can be closed immediately on the signing of an armistice. They will be needed as temporary refuges while the homes of many are being built or reconditioned. But more important than any fabric will be the continuation into post-war life of the higher standards of health and hygiene and the spirit of community living now being fostered in the best shelters.

ANGLO-RUSSIAN MEDICAL CO-OPERATION

The heroic resistance of Russia in defence of her soil has stimulated various groups of workers in this country to express their sympathy and admiration in numerous ways. The most fruitful possibilities of co-operation lie in those fields where politics obtrude but little, and in medicine and in science movements are already on foot to start the collaboration that we hope will grow in intimacy after this war is over. About a fortnight ago it was announced that an Anglo-Soviet Public Relations Committee had been set up in London, with Lord Horder as president and Prof. A. V. Hill, M.P., as chairman of the executive committee, and the officers of this committee sent a telegram to the Soviet Ambassador on behalf of "members of the Conservative, Liberal, and Labour parties, scientists, scholars, religious leaders, publicists, editors, and writers." The British Association has organized a conference between representatives of Britain and the Empire, the United States, Soviet Russia, and China, to "demonstrate the common purpose of men of science in ensuring a post-war order in which the maximum benefits of science will be secured for all people." Last week a number of medical men met at the house of the Medical Society of London to discuss the formation of an Anglo-Soviet Medical Committee. At the meeting it was announced that prominent members of the medical profession had promised their warm support to a project having as its aim increased Anglo-Soviet medical co-operation. M. Maisky, the Soviet Ambassador, was present, and in a few words told the audience that he came of a medical family, and therefore had a strong interest in the medical profession. His father had been an army doctor, and his brother was at present in charge of a hospital on the Eastern front. He himself as a child had made a humble contribution to medical science by looking after the guinea-pigs in his father's laboratory. Sir Alfred Webb-Johnson, P.R.C.S., who took the chair, was elected president of the new committee, and various distinguished

medical men were elected vice-presidents. Support was promised from the medical branches of the Navy, Army, and Air Force. One practical proposal was made that translations should be made into Russian of medical literature bearing upon the war, and in this connexion Sir Philip Manson-Bahr drew attention to the valuable material that was available in the Bulletins of War Medicine edited by Sir Harold Scott. Whatever shape the various forms of collaboration eventually take, our Russian medical colleagues can be assured of our quick interest and deep sympathy in the terrible professional problems with which they must be faced at the moment.

RASPBERRY-LEAF EXTRACT

It is interesting to note that raspberry leaves are seeking an entrance into materia medica. Recently Burn and Withell[1] described pharmacological effects of extracts of raspberry leaves which included the relaxation of the uterine muscle of the cat. In our last week's issue Sir Beckwith Whitehouse has presented new evidence that raspberry-leaf extract has the power of relaxing the uterus of the human subject. These clinical observations rest for the moment on two cases only, and more work is being done. The pharmacological investigation indicated that there may be more than one active substance present. Thus certain extracts when injected intravenously cause a large rise in blood pressure, though this followed a transitory fall of blood pressure due to an action on the heart. The depressor constituent, however, did not appear to be related to the substance acting on the uterus, since uterine relaxation was readily obtained when no fall of blood pressure occurred. The action on the uterus was not specific for the plain muscle of that organ, since a similar relaxation was produced on the muscle of the intestine. As Prof. J. H. Burn points out in our correspondence columns, the choice of the word "fragarine" is not altogether happy, and it would be well to wait upon the final verdict of the chemist before deciding what the active substance in raspberry-leaf extract should be called. Side by side with these scientific observations it may be noted with interest that raspberry leaves are being recommended in the daily press as a substitute for tobacco. They were commonly smoked in Germany during the last war. Those who have tried them, however, while finding them pleasant, complain that they lack tobacco's stimulating effect.

ANTI-TUBERCULOSIS WORK IN INDIA

The Tuberculosis Association of India was formed last year under the presidency of the Vicereine, the Marchioness of Linlithgow, who, as the daughter of the late Sir Frederick Milner, has a hereditary interest in anti-tuberculosis work. The association has already made good in a number of directions. It has undertaken broadcast talks, summoned a conference of tuberculosis workers, and arranged post-graduate courses for doctors—one of these courses was held in Bombay and another in Calcutta during the early part of this year, and a third will be organized in the autumn, probably at Delhi. Since the association came into existence new sanatoria have been opened at Amritsar and Quetta, eight are building, and eleven others are under consideration. Three new clinics have been opened, and thirty others, together with five tuberculosis hospitals, are planned. One of the most important events of the year has been the opening of the Delhi tuberculosis clinic, which it is hoped will serve as a central model institution for imparting training to doctors, health visitors, and other tuberculosis workers. During the first four months of its existence 1,293 patients were treated, and the number now being seen daily is about 35. The clinic is working in collaboration with a tuberculosis hospital, with selected private practitioners of the district, and with care and after-care committees. Another important new beginning is the opening early this summer of the Kasauli Sanatorium, which is intended to teach modern methods of diagnosis and treatment to doctors and others who intend to specialize in tuberculosis. At the recent annual meeting of the association it was announced that the Government of Madras is introducing a nine-months course, leading to a diploma, in tuberculosis, and that the Bengal Government has decided to establish a sanatorium at Peshok, in the Darjeeling district. A generous donor in Calcutta has given a sum to build and equip the sanatorium. At the same meeting the medical commissioner of the association, Dr. C. Frimodt-Möller of Copenhagen, reported on his visit during the year to five Provinces and six States, when he inspected forty-five institutions and the proposed sites for a number of new ones. The association extended Dr. Frimodt-Möller's appointment for a further two years.

EXPERIMENTAL NEPHRITIS

The well-known experiments of Masugi[1] are the only ones which have so far been successful in producing a glomerulo-nephritis in animals similar to that found in the human subject. Masugi's method was to inject into a duck an antigen consisting of ground and washed rabbit's kidney. After twenty-five to one hundred days the duck's serum is injected intravenously into a rabbit, and after an interval of from six to eight days nephritis develops in the latter animal. The commonly accepted explanation of this phenomenon is that it is allergic, and that the duck has developed antibodies which act upon the kidney of the rabbit. The experiment has been confirmed by numerous other workers, but there are difficulties in accepting the explanation that it is a simple reaction between antigen and antibody. One of these difficulties is the time factor, because reactions between antigen and antibody occur immediately. Sarre and Wirtz[2] repeated the Masugi experiment, but injected the serum directly into one renal artery while the circulation of the other kidney was interrupted for about fifteen minutes. Only the kidney into which the serum had been injected developed nephritis. Thus the initial reaction takes place at once, and another factor is evidently needed to produce nephritis several days later. Kay[3] suggests that this second factor depends on the development in the rabbit of antibodies against the serum proteins of the duck. Why this should be necessary is not yet clear.

Schoeber[4] does not accept the allergic hypothesis completely, and has tried to support by experimental work the theory that glomerulo-nephritis in man is toxic in origin. He has injected into rats either plasma or serum or an ultrafiltrate of plasma (from which the proteins have been removed) obtained from human patients suffering from active nephritis, and he shows that in the majority of cases the rats develop histological changes of nephritis within four days. The experiment was not successful if the plasma was obtained from patients whose disease was no longer in

[1] *Lancet*, 1941, **2**, 1.

[1] *Beitr. path. Anat.*, 1935–6, **96**, 391.
[2] *Klin. Wschr.*, 1939, **18**, 1548.
[3] *J. exp. Med.*, 1940, **72**, 559.
[4] *Edinb. med. J.*, 1941, **48**, 322.

an active and progressive state. The renal changes in the affected rats were practically confined to the glomeruli, and consisted of proliferation of the glomerular cells with hyperaemia, increase of nuclei, and adhesion of the glomerulus to the capsule. This experiment appears to be the first to demonstrate in the blood of human nephritics a toxic substance capable of producing glomerulo-nephritis in animals.

VITAL STATISTICS IN SCOTLAND, 1939

The vital statistics for Scotland during 1939, a limited edition of which has now been published, are in several respects outstanding. For the first time in the history of the country the estimated population exceeded five millions. The lowest rates ever recorded in Scotland were given by the birth rate, 17.36 per 1,000; the proportion of illegitimate births to total births, 5.97%; the death rate of 12.87 per 1,000 (with one exception); the infant mortality, 68.5 per 1,000 live births; diseases of pregnancy and childbirth, 4.49 per 1,000 live births. The marriage rate of 9.24 per 1,000 was with one exception the highest ever recorded in Scotland. Deaths from the principal epidemic diseases numbered 2,056, yielding a death rate for the second year in succession of 41 per 100,000, the smallest ever recorded in Scotland. The most frequent cause of death in this group was influenza with a death rate of 18; the next largest causes of death were whooping-cough and diphtheria with rates of 8. The death rate for measles was only 0.3, the smallest ever recorded. A new and important feature of the report was the comprehensive analysis of the 3,832 stillbirths registered during the first year of the Registration of Stillbirths (Scotland) Act. These have been tabulated by age of mother, cause, geographical divisions, month of registration, and number of previous children. Parity of birth and age of mother were correlated with stillbirths. The multiparae had a lower proportion of stillbirths than the primiparae, except under the age of 20, and the proportion of stillbirths increased with increasing age of mother. There was no evidence of a seasonal trend in the stillbirth rate. Of the 3,832 stillbirths there were 901 cases in which the cause was ill defined and 362 cases in which the cause was unknown. These high proportions may be due to novelty and may improve as the specifications become more apparent, but if no large part of the unknown group can be attributed to detectable causes, then an investigation into the factors causing stillbirths will be necessary before any improvement in the stillbirth rate can be expected.

FIFTY YEARS OF ANTITOXINS

On December 4, 1890, Behring and Kitasato published their epoch-making discovery of the nature of immunity in diphtheria and tetanus. They had shown that the serum of an immunized animal contained a substance which neutralized the toxin produced by the micro-organism, and that by it another non-immune animal could be protected not only against a lethal dose of that toxin but against the infection itself. Not only was this discovery the foundation of all future treatment with antitoxin, but its authors clearly foresaw and predicted its therapeutic consequences. The *Deutsche Medizinische Wochenschrift*, in which this announcement appeared, celebrated the fiftieth anniversary of the occasion in its issue of December 6, 1940, by reprinting the paper, apparently in its original type, inserting a full-page portrait of Emil von Behring, and publishing a series of contributions on related subjects as well as appreciations of von Behring's life and work. Aschoff's recollections of the man differ from the rest of these in being no mere exercise in adulation; he is, indeed, a little critical, and recalls having been given antitoxin himself after contracting diphtheria from a necropsy. The immediate result was successful, but he appears to have suffered later from diphtheritic paralysis, whereas his wife and child, who also had diphtheria and received no antitoxin, made an uninterrupted recovery. Gundel writes on active immunization against diphtheria, confining himself to experiences with this in Germany; Magnus writes on the prophylaxis of tetanus; and an article by Schmidt on serum sickness is reprinted from a recent book by this author. Very strong national feeling is expressed in some of these contributions, and it is evidently a source of satisfaction under present conditions that von Behring's co-discoverer was a Japanese. This propagandist element is intensified by the introduction of a paper by Kikuth on what is really a quite unrelated subject—except that it represents another great German achievement—the action of germanin (Bayer 205) in sleeping sickness, with a pointed reference to African colonies now under foreign control. Less biased and more useful reviews of some of these subjects would have called for the more frequent citation of work done in other countries, particularly on various aspects of diphtheria immunization in Great Britain and the United States. It is contrary to the finest principles in science to allow racial prejudices to affect judgment on any man's work, and war, so far as we know, has led to no attempts in this country to detract from German achievements in medicine, or to overrate our own because they are British. It is unfortunate that this somewhat discordant element should mar a jubilee celebration which would otherwise be of the happiest kind. The profession in Germany may be assured that their colleagues in other lands accord full honour to von Behring and other great German pioneers whose work towards the end of the last century laid the foundations of modern medical microbiology.

MEETINGS AT HEADQUARTERS

B.M.A. House during the latter part of last week was a scene of unwonted activity in wartime. By this we mean visible and audible activity, for it is very far from being an idle place nowadays, as those who frequent Tavistock Square are well aware. On Wednesday, September 10, the Journal Board held one of its periodical business meetings. On Thursday, at 10 a.m., the Executive Committee met, and this was immediately followed by a meeting of the Council. At noon the Great Hall filled up for the opening of a special Conference of Representatives of Home Divisions under the chairmanship of Dr. Guy Dain, Chairman of the Representative Body. At 12.30 p.m. the President, Dr. Thomas Fraser, presided over the statutory Annual General Meeting of the Association for the year 1941, and at the end of brief formal business conferred, amid great applause, the Gold Medal of the Association upon Sir Kaye Le Fleming, whose memorable services are recorded in the book handed to him. During the resumed Conference of Representatives Sir Kaye once more showed his gift of statesmanship when the meeting found itself in a dilemma, largely brought about by the inexperience of new Representatives. At 5 o'clock the Council held another short session, when it reviewed the events of the early afternoon. The Conference went on with its programme throughout Friday, and after that was over the Executive Committee met again to consider a problem in procedure put up to Council by one of the Divisions. A full account of the first day's proceedings of the Conference of Representatives appears in our *Supplement*. The second day will be reported next week.

LONDON AIR-RAID SHELTERS REVISITED

Nine months ago an investigation was undertaken on behalf of the *British Medical Journal* into the health conditions of London public shelters.[1] It aroused a considerable amount of interest and, we believe, helped to awaken a conscience on this subject. With a view to discovering what improvements have been effected since last winter a further survey has lately been carried out during which various types of shelter in the City of London and Westminster and in about ten London boroughs have been thoroughly inspected. The investigation has also extended to seven of the principal cities of the country, and the results will form the subject of a second article. Some comments on the general lessons to be gathered from this investigation appear on another page.

Tube and Tunnel Shelters

Tube stations now used as shelters are bunked for 22,800, but ten times that number of people could shelter there, and many prefer sleeping on mattresses on the floor instead of in bunks. Although the stations used as shelters are under the control of the local authorities in whose area they are situated, they afford a good example of what can be done when the supply and installation is delegated to one authority, in this case the London Passenger Transport Board. Medical aid posts, canteen points, drinking-water facilities, and lavatories are standard at every station. In the City of London, Westminster, and St. Pancras there is now a laundry service, and at Leicester Square tube station a baggage room for shelterers has been opened, while others are being put in at stations under the Westminster Council's control. This room, where each shelterer has his "pigeon-hole," is disinfected twice a day, and the authorities believe that the bedding is kept much cleaner when dealt with in this way. At each medical aid post there are trained nurses and assistants, as well as orderlies, on duty all night, and a doctor visits during the evening. The posts have been roofed in to ensure quiet—incidentally making them rather warm—and there are bunks for treating cases of illness. Instead of the early canvas contrivances for sanitation, concrete structures have been built and mechanical ejectors installed, making a great improvement.

A criticism of the tube station shelterer, who may come from a considerable distance, was heard at Euston, where a warden complained that these people did nothing for themselves. Partly it is explained by the narrowness of the platforms and passages, which makes free movement out of the question and interferes with any community life. A further disadvantage of the tube shelter is the difficulty of ventilation during the night after the last trains have passed through. Fans are installed, but the people on the spot show a surprising unwillingness to make use of them. The non-dimming of the lights also interferes with the sleep of the shelterers, especially of the children, of whom there are far too many, and who are often seen running about at midnight. At St. Paul's tube station the medical aid post reported that something under 200 cases had been treated since January. These included a good deal of minor illness, a few cases of vertigo, and several of conjunctivitis.

Two large tunnel shelters deserve mention, one in the City and the other in Southwark. Much has been done in both to improve ventilation and sanitation, and both are bunked to take some thousands of people. The Southwark tunnel has three medical aid posts, three canteens, a play centre for children, and a space for recreation. Water-closets are being installed at intervals, but are much too close to the bunks. The lighting is fairly good, and considering the numbers who take refuge here there has been little to complain about on the score of health. The "under-fives" suffer most, tending to get bronchitis, especially those of them who return to shelter life after an infectious illness. All children under 5 in the Southwark tunnel are supposed to go to one of the medical aid posts every night for throat-spraying, and since this practice was started "throats" have greatly decreased. But the children, as their morning fretfulness indicates, are not getting enough rest. A good deal of scabies has been noticed. Tunnel shelters are difficult to manage owing to their length and narrowness, but as time goes on better methods doubtless will emerge. There are not enough women wardens here.

[1] *British Medical Journal*, December 7, 1940, pp. 790 and 796; December 14, p. 841; and December 21, p. 873.

Large Basement Shelters

A large City basement shelter was revisited. This was always one of the better shelters, but many further improvements have been carried out. Wooden bunks are being replaced by steel. Walls of the bays have been whitewashed. A laundry service, of which full advantage is taken, has been introduced. The canteen, run by the Shaftesbury Society, pays attention to the nutrition value of the food. Great improvements were also found in a large basement shelter in the East End, which was unrecognizable as the place seen eight months before. It had been bayed, whitewashed, and properly lighted, and water-closets had been substituted for the old latrines. There was a first-class medical aid post with a doctor and staff of nurses on duty all night, and there were two or three canteens.

The largest shelter in Marylebone is also excellent. It is air-conditioned, the walls have been colour-washed, and all pipes and fittings painted red. At a very good medical aid post nurses do their best to inculcate good habits among the shelterers. They have been very successful in arranging anti-diphtheria inoculations. The bunks in the bays are not too close together, and the water-closets and washing facilities are right away from the sleeping part. The people are allowed to keep bedding in the shelter, which is disinfected once a week. A section here is kept entirely for women.

Small Basements and Crypts

Two London boroughs, central and south-west, have concentrated on small basement shelters, sometimes reinforced basements in buildings, occasionally specially constructed semi-underground concrete structures. The central one was a two-story shelter with brick walls and concrete floors. Water-closets were installed and taps put in, but there were no arrangements for washing or heating, and no ventilation other than by the doors. The lighting also was not good. From a safety point of view, however, it was probably much better than some adjacent reinforced basements of houses. A few basement shelters seen in West London can only be described as slums. They were full of filthy bedding, the air was foul, and the walls in an appalling condition. The closets (chemical) were just inside the "front door." No one seemed to be responsible for these particular shelters.

A series of basement shelters under a row of shops in South-West London were being reconstructed and fitted with water-closets, sinks, and taps. It was stated that electric heaters had been tried in these shelters, but the people had abused the provision of points by bringing in too many fires and so causing fusing. The council is now installing tubular electric heating thermostatically controlled. These smaller shelters seemed to be very crowded because they were usually bunked to capacity. The medical aid and canteen arrangements (except in one borough) were satisfactory. Either they were visited by a doctor or nurse from an adjoining post or they contained a small first-aid point. Shelters of this type seemed to be fairly well occupied in the suburban areas by people who were evidently neighbours.

Finsbury, the only London borough which has had a definite air-raid shelter policy for some years, deserves special mention. One-half the Finsbury shelters are of concrete construction and the other half are reinforced basements, but the borough is trying to get many of the basements closed. The policy of this borough is to have concrete shelters with a high safety factor rather than dispersal in small inconvenient shelters. The policy does not end with the assurance of relative safety. For example, in the canteens iced milk, which is sold out every night, was provided during the hot weather, also national wholemeal bread sandwiches with salad fillings. Trouble had been previously experienced in getting what was considered to be proper food served in the shelters. Air-conditioning and alternative lighting are to be installed in most shelters. Water-closets are constructed well away from sleeping places. The shelters appear open to criticism only on the ground that they are too crowded with bunks, with not enough space for moving about or for

recreational purposes. Here, as in other boroughs, a rise in the incidence of scabies has been noted.

Church crypts are favourite shelters and a cause of anxiety to most local authorities. Several of these were visited, but except for their more interesting architecture and the fact that there is usually a brick floor, they are much the same as the smaller basements.

Trenches and Railway Arches

The types of shelter which have caused most controversy are the specially constructed trenches and the railway arches, the latter being often taken over by the people against the wishes of the authorities. The condition of the trenches last winter is too well known to need description. Thousands of pounds have been spent in drying them out and in reconstruction, heating arrangements, and proper lighting. The best trench shelters seen were at Poplar, where they have been asphalted over the top, the walls cream-washed, electric fans, concealed lighting, and steel bunks have been put in, and altogether the appearance has been made most attractive. All the trench shelters seen in London were good, though not all had the Poplar "finish." Trenches which have proved impossible to recondition have been closed.

In the railway arch shelters also large improvements have been made. Arches have been re-roofed, in some cases re-walled and colour-washed, lavatories have been installed, and medical aid posts and canteens made available. This type of shelter is extremely popular and has had to be "built round the people." The local authorities deserve much commendation on the enormous amount of work and planning which must have been put into making this type of shelter habitable.

What was described in our article of December 14 last year as the "worst shelter of all," in the East End, was revisited. This, too, has been re-roofed and drained. Cura stoves have been installed in each arch, but unfortunately they are not in this instance successful. The arches are fairly well lighted. The lavatories are outside each arch, well away from the sleeping quarters, and the end arch is used for the purposes of a small medical aid post and a canteen. The local vicar, Father Groser, is responsible for the introduction of amenities which include a recreation room. He it was who pointed out that the people who occupy these arches have mostly only "bits of homes"—a living room, but no sleeping quarters—and therefore sleep in the shelter at night. Very many of them in their separate bunks are sleeping alone for the first time in their lives, and that, in Father Groser's opinion, may have accounted for the extraordinary lack of illness last winter.

Surface and Domestic Communal Shelters

Only two street surface shelters which were in dormitory use were seen, one in a north-west borough and the other in the east. Many street and domestic communal shelters are bunked but not in use. Some are bunked but have no lights; others, though well constructed, are just empty shells. Hundreds of these shelters have no gates or doors, with the result that they are fouled by human and animal excreta and are depositories for all the rubbish in the neighbourhood. The sanitary arrangements in them are extremely primitive. The two which were seen in dormitory use, however, were good, and, strange to say, popular, probably owing to the personnel in charge. In both cases they were a range of compartments and both had a medical aid post and canteen. Sanitation was water-borne. The sleeping bays were divided into smallish groups for families. They were bunked, but not too closely, and lights could be dimmed. Both of them had suffered from damp, but had been dried out and when visited were in good condition.

Generally speaking, domestic communal shelters are used either not at all or only on an "alert." Arrangements for keeping them clean are not satisfactory; they are left to the users, and the work does not get done. These shelters should be sprayed and cleaned out, or at least inspected, by the local authorities once a week. Many of them at present are breeding-places of disease.

Of all the types of shelters seen in London the basements of business houses, factories, or warehouses—the property of private firms—taken over by or lent to the local authority, were the most satisfactory. They proved to be better constructed and better lighted, and were usually warmed by central heating. A member of the firm's staff is usually in attendance as warden. These shelters seem to be better cared for than any others. Much—almost everything—that has to do with the condition of a shelter depends upon the shelter warden. He is the keystone of an otherwise unsteady arch. Much also in the large shelters depends upon a shelter committee to give a lead to the users. From the point of view of sleeping, of recreation, and of such social life as is possible in these circumstances the tube stations are far behind even the small basement and trench shelters, but because depth gives a feeling of security they will continue to be largely requisitioned. New tube extensions are at present under construction, and these will afford fresh accommodation of this kind. The Ministry of Health informs us that, broadly, the bunking and medical aid posts will be on the same lines as those at present in operation in the large public shelters. Work is now proceeding on reinforced street surface shelters, and it is believed that a solution has been found in the shape of a shelter much resembling in external appearance the original brick constructions, but with the walls reinforced throughout by means of steel surface rods. A shelter of this type has been subjected to a test, and its behaviour when the bomb exploded was satisfactory. There was no collapse of the structure, although it moved upwards and sideways to a maximum distance of over six feet. There was some cracking of the walls, but the steel rods in them were not broken, and no such breakdown of the structure occurred as could have caused casualties among its occupants. Another direction in which central work is proceeding is in experiments on the dust in different types of shelters and the part it may play in disseminating the organisms of disease. Experts working under the Ministry of Health are hopeful of reducing the possibility of infection which may be spread by dust before there is any winter crowding. The various methods of aerial disinfection are being explored. But the shelters are more than a winter problem. In July last, during a period of lull, there were over 100,000 people in the public shelters of London.

The warmest thanks are accorded to the officials of the various local authorities and to the workers in social welfare organizations for the facilities and help afforded.

AWARDS FOR GALLANTRY IN CIVIL DEFENCE

A *Supplement* to the *London Gazette* dated September 5 announces the award of the George Medal to Dr. Leonard Findlay, medical superintendent, Mill Road Infirmary, Liverpool, to Dr. Robert Wilson Wyse, resident surgical officer, Salford Royal Hospital, to Mr. D. M. Barlow, staff officer, A.R.P. Casualty Service, and to Mr. G. Aspin, leader, A.R.P. Rescue Party, Salford. The announcements read as follows:

DR. FINDLAY: "Dr. Findlay displayed outstanding courage and devotion to duty when the Mill Road Infirmary was badly damaged during an air raid. Although badly shaken and severely burned he immediately organized rescue work and personally led parties of volunteers to release persons trapped under the wreckage. He worked without ceasing throughout the night and following day, and refused to have his own wounds treated until he had accounted for all his patients and staff. Under his cool and courageous direction many lives were saved and all the patients evacuated to other hospitals."

DR. R. W. WYSE, MR. BARLOW, and MR. ASPIN: "A high-explosive bomb demolished the nurses' quarters of the Salford Royal Hospital, and several nurses were trapped under tons of masonry. Dr. Wyse led the rescue operations and, at great personal risk, reached the basement, which was in complete darkness and ankle-deep in water. Despite the danger from damaged electric cables and escaping gas he removed rubble and bricks, and was successful in extricating three nurses who, but for his gallant efforts, would have lost their lives. Another nurse was located by Staff Officer Barlow, who, in an attempt to release her, crawled under tons of debris. For hours he lay under the wreckage encouraging the nurse and moving masonry stone by stone. He was joined by Leader Aspin and, although there was danger of the collapse of about thirty tons of debris, the two men worked on without the slightest concern for their own safety. When it became clear that the nurse's arm was so badly trapped that further attempts to release it would prove fatal to the victim and rescuers, Dr. Wyse amputated the limb and the nurse was got out."

SCOTLAND'S HEALTH IN WARTIME

The health services of Scotland in the period from January 1, 1939, to June 30, 1941, are surveyed in a summary report issued by the Department of Health for Scotland. This report (H.M. Stationery Office, 4d.) is mainly concerned with the health of the people under wartime conditions and with the war emergency services of the Department. In some parts of the country the health organization and the emergency services have been severely tested by active war conditions such as heavy raids and the prolonged handicaps of black-out. The general conclusion is that in spite of wartime calls on personnel the health and social services of peacetime are being satisfactorily maintained; and the evidence to date indicates that the health of the people remains good.

Emergency Relief Organization

The heavy air raids on Clydeside in the spring of this year provided the first practical test for the Emergency Relief Organization. Following upon the lessons of these attacks the Department has maintained close touch with local authorities through personal visits, and many rehearsals have been staged to discover how services might be improved. Since the end of the period covered by the report instructional courses for workers in the Emergency Relief Organization have been organized.

Scotland possesses about 2,700 rest centres. Arrangements for the comfort of the occupants and for the provision of meals have improved steadily. Reserve stocks of equipment have been stored at various points throughout the country to meet any sudden emergency. To afford advice and assistance to persons—whether homeless or not—who find themselves in difficulty after enemy raids, information centres have been established in the large burghs, and smaller centres are being set up in small burghs and other populous areas in counties. Steps have been taken to strengthen the billeting organizations of local authorities.

Evacuation and Shelters

The first plans for the Evacuation Scheme were put into operation on September 1, 1939. A total of 174,605 people were transferred. By January, 1940, the number of evacuated persons remaining in receiving areas had fallen to 41,000. Reviews of the plans in 1940 brought new measures. The raids in the West of Scotland last spring led to a considerable increase in the numbers of persons evacuated. Since March, 1941, 12,000 school children have been transferred from Glasgow in official parties, and 90,000 persons in the priority classes have also been transferred from Glasgow to accommodation secured by private arrangement. Since May, 1941, the burghs of Greenock, Port Glasgow, and Dumbarton have been classified as sending areas and school children evacuated from them.

The health and comfort of people in air-raid shelters provided by public funds have been the responsibility of the Department since January, 1941. Improvements now being effected cover drying and ventilation, sanitation, seating, lighting, and bunking. The bunks are being supplied first of all in the smaller domestic shelters, and in addition bunks are being stored for installation in public and larger shelters should the demand arise. To ensure the maximum degree of dispersal of the population during raids the Anderson and other small shelters are being made as comfortable as possible.

The Scottish Hospitals

The hospital building programme is almost complete and the peacetime accommodation in fully equipped hospitals will soon have been increased by about 24,000 beds. These include the seven new country hospitals constructed and run by the Department of Health, as well as other institutions which have been upgraded and new hutted annexes to existing hospitals. Private houses lent to the Government have been converted for convalescent cases.

Many beds have been made available for non-urgent civilian cases so that the waiting lists of voluntary hospitals might be materially reduced. Urgent cases of ordinary sickness have never been refused admission to the Department's hospitals, but for less urgent cases an arrangement was made with the British Hospitals Association (Scottish Section) early in 1941, whereby patients on the waiting lists of voluntary hospitals might be admitted to vacant beds in hospitals or annexes provided under the Emergency Hospital Scheme. The response to this arrangement has been slow. Up to the date of the report only about 750 waiting-list patients had taken advantage of it. This result has been described as "disappointing" by the Secretary of State, who emphasized in a recent speech the advantages to be gained by persons undergoing treatment in these magnificently equipped modern hospitals in country areas, under the care of trained nurses and under the direct control of highly qualified medical personnel. Though planned primarily for wartime use, these hospitals are substantially constructed permanent buildings.

Recent experience of heavy raiding in the West of Scotland showed that the Emergency Hospital Scheme is able to deal with considerable numbers of casualties without its resources being strained. A high degree of mobility has been achieved in casualty services by the establishment of twenty-eight mobile surgical units and five fully equipped and staffed casualty evacuation trains. To supply skilled staff for the Emergency Hospital Scheme an Emergency Medical Service was established. This provides a nucleus of whole-time resident staffs in hospitals, and the scheme is organized so that the staff of any hospital can be quickly strengthened by surgical teams from outside. The Civil Nursing Reserve was also recruited to supply additional nursing staff for emergency hospitals and first-aid posts, and for district nursing services.

In Scotland there are 271 fixed first-aid posts (for early treatment of casualties and to relieve pressure at emergency hospitals), eighty-two mobile first-aid posts, 145 public cleansing centres (to deal with gas attacks), and 652 first-aid points (serving small towns and villages). The ambulance service comprises large numbers of vehicles, of which 972 are whole-time ambulances.

Other Health Services

Six maternity homes for evacuated expectant mothers were functioning by June, 1941, and four more were held in reserve. Progress has been made in the provision of nurseries where women engaged in war work may have their children cared for. More recently, the Child Care Reserve has been formed to recruit women who are fond of children and desire to work as nursery helpers.

On the outbreak of war the evacuation scheme interrupted the school health services, and in 1940 there had to be undertaken an additional 25,000 medical inspections for the Children's Overseas Reception Board. Nevertheless, the health of the children is believed not to have suffered. Those sent out under the organized evacuation scheme have shown a noteworthy improvement, and the Department's medical staff report favourably on the healthy appearance and good nutrition of evacuated children, particularly of those whose parents have allowed them to remain long enough to benefit by country life.

In the Highlands and Islands the State-aided medical and nursing service and the air ambulance service are still operating successfully.

The incidence of only one infectious disease has been really affected by war conditions: cerebrospinal fever has risen considerably. There was a tendency to an increase in the numbers of diphtheria cases, but in recent months medical staffs have paid a great deal of attention to the immunization of children of school age, of whom over 40% have been immunized. More beds have been released for the treatment of tuberculosis, the incidence of which has been somewhat higher recently.

The Department of Health for Scotland has issued a circular drawing the attention of local authorities to the Milk (Special Designations) Amendment Order (Scotland), 1941, which has just been made by the Secretary of State for Scotland. Under the Orders of 1936 and 1938 provision was made for the process of milk pasteurization known as the "Holder" process. Difficulties due to several causes are being experienced in maintaining or replacing apparatus licensed under these Orders, but none the less it is most desirable for the safety of the milk supply that pasteurization should as much as possible be encouraged. The new Order allows local authorities to grant a pasteurizer's licence in respect of an alternative to the "Holder" process, known as the "high-temperature short time" method. The amending Order is published by H.M. Stationery Office, 120, George Street, Edinburgh, at 1d.

Nova et Vetera

THE FOLK-LORE OF PULMONARY TUBERCULOSIS

In a recent paper on this subject (*Tubercle*, 1941, **22**, 55) Dr. J. D. Rolleston states that while engaged in the preparation of previous articles on the medical aspects of folk-lore (see *British Medical Journal*, 1939, **1**, 995) he had been struck by the numerous popular as distinct from scientific views concerning pulmonary tuberculosis. He had therefore collected the folk-lore of this disease, most of which was concerned with its prophylaxis and comparatively little with its aetiology and symptoms. It is noteworthy that long before it was held by the medical profession to be an infectious disease, it was regarded as such in some country districts in England, as well as among the Karaya Indians and in Brazil. Among the causes of the disease in popular estimation were catching cold, inspiration of a very cold north wind, the sudden cure of skin diseases, especially scabies, and sexual excess. The last factor accounted for the administration of the testes of a fox or chicken in folk medicine long before the introduction of endocrinology by Brown-Séquard. Dr. Rolleston classified the various folk-lore beliefs and methods in the prophylaxis and treatment of pulmonary tuberculosis as follows: (1) Transfer of the disease to other persons, animals, and inanimate objects. (2) Animal, plant, and mineral remedies apart from any idea of transfer. (3) Religious factors, such as invocations to the Trinity, Virgin Mary, and various saints, especially Pantaleon. (4) Charms of different kinds, some of which dated from Anglo-Saxon times. (5) Water in the form of drinking water and bathing in the sea, streams, wells, and fountains. (6) Miscellaneous remedies, such as the doctrine of signatures, the influence of the moon, odd numbers, and mechanical methods.

JOAN OF ARC

A gulf separates us from the Middle Ages, and at times we have to delve into psychopathology in order to understand the motives of some important movements of those days. Future generations may have to deal similarly with many of our own activities, but this does not alter the fact that our motivation is very different from that of the Middle Ages. The history of Joan of Arc is an illustration.

Her methods were those of her day; her inspiration was largely an anachronism; but in so far as she had a sense of national cohesion and destiny in a France that was still almost exclusively feudal in structure and outlook she heralded the future. She sensed the need for development of a centralized national State, and this made her a figure that neither her contemporaries nor future historians could ignore. This frail girl had a clearer vision than the learned ecclesiastics and the unlettered feudal warriors who were misruling the French provinces. The wonder is that she could impose her will on that motley crew of social pillars, plunderers, and adventurers. She did so by a method characteristic of her day. She urged national unity by presenting it as a divine command of which she was only the agent. In the Middle Ages this was sagacious statecraft. The anachronism in her actions was that she believed not only in her mission but in the origin of its inspiration. And she believed it so firmly that she could make others share her belief.

Was Joan Sane?

Historians have debated whether Joan was sane, but if Joan's sanity is in doubt the sanity of the whole of her generation must also be questioned. The sane do not follow the mentally deranged who hold a totally untenable position. An interesting approach to the problem of Joan's sanity is made by H. P. Bayon.[1] He tries to solve the issue by an analysis of Joan's behaviour in the ordinary circumstances of life, in childhood, at the hey-day of her achievement, and on her road to martyrdom. He stresses that all her actions indicate a courageous, simple mind, and none of her recorded utterings show evidence of mental unbalance. He explains the "voices" that gave Joan her divine mission as autosuggestion occurring in an age and an environment where this was not unusual. There was no deception here, though history is still left wondering whether deceit was not practised by those who made use of Joan. She may have been a tool in unscrupulous hands, but her own approach, which merely bears the stamp of her age, reveals neither insanity nor hysteria.

A. S.

[1] *Proc. roy. Soc. Med.*, 1941, **34**, 161.

Reports of Societies

OPHTHALMOLOGICAL CONGRESS

OCULAR INJURIES IN WAR

The Ophthalmological Society of the United Kingdom held its annual congress at Cambridge on September 4 and 5, with an attendance of about eighty members, under the presidency of Dr. R. AFFLECK GREEVES. Hospitality was extended by Trinity and King's, and a very successful meeting resulted.

A discussion, contributed to by more than twenty members, was held on "Ocular Injuries resulting from the War." Mr. O. M. DUTHIE, who opened, said that ruptures had proved the most frequent of all war injuries of a serious type. Even when the injury was not severe the end-results were deplorable. Many cases of rupture, especially those due to flying glass, were virtually untreatable. Subconjunctival ruptures, with or without dislocation of the lens, were not infrequent. Dr. S. ZUCKERMAN, who restricted himself to civilian air-raid casualties, dealt with the problem of injuries supposed to be due to blast. He had studied the records of the last war, and had found nothing to suggest that there were changes in the eyeball due to blast. At relatively high pressures, only to be experienced when the casualties were very close to the bomb, changes, of which the commonest was retrobulbar haemorrhage, would be experienced, but such cases would probably be fatalities in any event. He gave an interesting account of a great deal of research work on the question of blast.

Mr. E. B. ALABASTER analysed 100 cases of eye injury admitted to a casualty hospital after air raids. Of these, 60 were cases of traumatic conjunctivitis, 21 were penetrating wounds caused by metal or glass, 6 were corneal abrasions, 5 were subconjunctival haemorrhage, 5 were injuries to the lids only, and there was one case each of central retinal block, detached retina, and orbital cellulitis. Of the 21 cases of penetrating wounds, 12 required enucleation of one eye. Mr. HERBERT CAIGER said that nothing had brought home to him the horror of this war so much as the case of a man aged 65 who was injured in a shelter last November. One eye was absent, and the man declared that it had been blown right out of the socket by blast, while the other eye showed detachment of the retina.

Several speakers mentioned cases in which there was no apparent injury to the eye except as the result of blast. On the other hand, it was suggested that the term "blast" was used wrongly. One speaker, for example, had referred to a blast injury in a patient who had been thrown 40 feet, another speaker remarking that it would be as logical to ascribe to blast the injuries received on a fall from a high roof. Mr. A. B. NUTT mentioned the desirability of the ophthalmic surgeon seeing eye cases as soon as possible after admission to hospital, before they were "lost" in the surgical wards on account of other injuries. Sometimes when there were extensive injuries to the face it was found that gross stitching with thick silkworm gut had been done without regard to alignment or normal anatomy of the part. Mr. R. C. DAVENPORT and other speakers referred to the frequency with which intra-ocular foreign bodies were found to be non-magnetic, in keeping with the low ferrous content of shell and bomb cases used in this war. Mr. VICTOR PURVIS mentioned that on the night of the great incendiary attack on London, December 29, 1940, 128 firemen were treated at Moorfields, all but four of whom had corneal or conjunctival foreign bodies

and a staining of the cornea probably due to smoke irritation. None of the 128 required in-patient treatment, and all but 24 did not need to come to hospital a second time.

Eye Protection

Sir JOHN PARSONS opened a brief discussion on eye protection in warfare, dealing with the subject only from the military point of view and giving the substance of the report on the Cruise vizor by the subcommittee of the Military Personnel Committee dealing with body armour. Sir RICHARD CRUISE said that at least 50% of eye casualties such as ophthalmic surgeons saw in the last war could be prevented by some form of practical eye protection. It had been urged against his vizor that visibility was seriously impeded, but even if that were so the vizor need not be lowered on any occasion when it was likely to handicap the wearer. Dr. HARRISON BUTLER pleaded for the use of an official vizor not only for soldiers but for fire watchers and others engaged in civilian protection, and it was remitted to the Council of the Society to consider taking up with the Ministry of Home Security the question of the issue of some form of eye protection along with the steel helmet for civilians.

Refraction under Service Conditions

Squadron-Leader J. H. DOGGART gave an interesting paper on refraction under wartime Service conditions, suggesting a number of ways of facilitating refraction tests when large numbers of men awaited examination. Some discussion followed on deception by the examinee. It was the general testimony that, although malingering was frequent in the last war, it was very unusual in this, but, on the other hand, there were cases of men who tried to conceal defects of vision in order to obtain a particular job. One speaker said that it was common for the vision of recruits to improve after entry into service, so that the man who when he joined up had a vision of 6/9 was found to be 6/6 some time afterwards; but against this it was pointed out that the examiners on the two occasions were not likely to be the same person, nor the conditions of examination quite the same.

Unusual Symptoms of Migraine

A long discussion followed a paper by Dr. T. HARRISON BUTLER on unusual symptoms of migraine. Dr. Butler was of opinion that a comparatively small number of migrainous cases had an ocular origin. Headache newly arising must be due to some recent cause, and an ocular defect which had been present for some years, if not from birth, was unlikely, suddenly and independently, to give rise to it. Even large errors of refraction and muscle balance did not generally cause headache, and, moreover, if headache was present it was often not relieved by glasses. The PRESIDENT was of opinion that many headaches were wrongly put down to errors of refraction. Migraine was excited by different causes, an important one being fatigue. Another speaker, Mr. A. B. NUTT, suggested dietary deficiency as a possible cause. Lack of nicotinic acid was said to give rise to a complex series of symptoms, including headache and deafness. Mr. FRANK HECKFORD, who had kept certain records of persons said to be suffering from headaches, said that the large majority seemed to have no errors of refraction or disturbance of muscle balance. Persons specially subject to headache were young people between the ages of 15 and 25 who suffered from vasomotor disturbances, and nearly always complained of cold hands and feet and a feeling of weight on the top of the head, especially pronounced in girls during the period.

Oedema of the Macula

The PRESIDENT contributed a paper on oedema of the macula, a condition which, he thought, was always accompanied by distortion of central vision, varying in degree according to the severity of the oedema. A sense of diminution in the size of objects was also a common phenomenon. The clinical signs included loss of retinal transparency, common to all cases, but in the slighter degrees of oedema calling for very minute ophthalmoscopic examination and careful comparison with the appearance of the macula in the other eye for its detection. With regard to the ultimate clinical effects of oedema, central vision might be restored, improve up to a point, remain permanently reduced, or be destroyed as in most cases of central venous thrombosis. Complete restoration of the normal appearance did not always mean full recovery of vision.

Other Communications

Other papers can only be mentioned. Mr. H. NEAME brought forward 17 cases of dendritic ulcer, in 8 of which there was association with herpes simplex. Mr. WILLIAMSON-NOBLE described three cases of unsealed retinal holes. His conclusion was that it was open to doubt whether the presence of a hole with a small peripheral loss of field and no interference with central vision called for operation, particularly at a time like this, when air raids might interfere with proper operative cure. Mr. FRANK LAW read a paper on squamous-celled carcinoma of the conjunctival surface of the lid—a rare condition and one in which it was difficult to determine the site of origin of the neoplasm. He described the appearance of the lesion in one case—an ulcerated area some 6 mm. across in a position just nasal to the midline. Removal was undertaken under general anaesthesia, with a good result. Mr. G. T. W. CASSELL described a case of orbital angioma. Wing-Commander KEITH LYLE some cases of diplopia due to head injury, and Mr. LINDSAY REA a specially interesting case of keratitis and its treatment by the osmotic action of warm magnesium sulphate.

Correspondence

Puerperal Tetanus

SIR,—In describing their very interesting case of puerperal tetanus Drs. Bruce Maclean and P. Challen (August 30, p. 302) state that cases of this condition are mainly described in America, France, China, and Germany, and they proceed to quote only foreign references. I am writing to draw attention to a long report upon this subject by a committee set up by the Royal College of Obstetricians and Gynaecologists which was published in the *Journal of Obstetrics and Gynaecology of the British Empire* as recently as June, 1941. This committee arose out of an inquiry addressed to the College by Sir Frederick Menzies (at that time Medical Officer of Health to the London County Council) as to the possible part played by infected dressings as a source of puerperal tetanus. The committee included among its members Prof. McIntosh of the Middlesex Hospital and Dr. Goodhart of the London County Council pathology service.

The report shows that cotton-wool, and still more wood-wool (cellulose tissue), as supplied to the public, contains many spore-bearing organisms. The lesson to be learnt from this is that cotton-wool and wood-wool must undergo thorough sterilization before being used in surgical and obstetrical dressings, but the report should be studied in detail by those interested in this work. In the past catgut has been blamed for the few cases of tetanus following "clean" surgical operations, but it seems likely that dressings rather than catgut may have been responsible for some, if not most, of these cases.—I am, etc.,

W. FLETCHER SHAW,
President, Royal College of Obstetricians and Gynaecologists.

London, W.1, Sept. 9.

Raspberry-leaf Extract

SIR,—I have read with some interest the paper by Sir Beckwith Whitehouse on the action of raspberry-leaf extract on the human uterus. Having been engaged with Mr. Withell in pharmacological investigations, the positive results of which led Sir Beckwith Whitehouse to make his clinical trials, I was hoping that clearer evidence of value to patients would be obtained. The evidence, however, rests on two cases, and the record of the observations in the second case appears to me to show nothing. Even the record in the first case is not conclusive, since inhibition of uterine contractions may occur as a result of nervousness.

In the second place, some comment is surely needed on the choice of the word "fragarine" as a name for the substance which inhibits the uterine movements. *Fragaria* is the Latin name for the strawberry, and "fragarine" clearly conveys the idea that the substance is something present in the strawberry. The Latin name for the raspberry is *Rubus*. In any event, it is a good scientific rule to await the chemical isolation of the active

constituent before giving it a name, as was done by Dudley and Chassar Moir in the case of ergometrine. I trust that the name "fragarine" will be dropped.

Finally, I must make some comment on the references to me made by Sir Beckwith Whitehouse in his paper. He says that Mr. Withell "undertook to prepare extracts" as a result of his approach and that "when enough material was obtained the extracts were submitted to" me. This is not so. Mr. Withell had mentioned to me that Sir Beckwith Whitehouse had asked whether anything was known of the action of raspberry-leaf extract. Stimulated by this inquiry, I suggested to Mr. Withell that he and I should carry out an investigation, and in the initiation of this investigation Sir Beckwith Whitehouse had no share. As a matter of interest I sent him a preliminary account of our findings as they stood in March. This he has published in his paper without my concurrence and despite the fact that these observations were rendered obsolete by our later work, as described in our paper in the *Lancet*.—I am, etc.,

Department of Pharmacology, Oxford, Sept. 13. J. H. BURN.

Care in the Use of the Group O Card

SIR,—We wish to draw attention to the risks that may be run when the recorded blood group of a volunteer blood donor is accepted without confirmation. There are now so many members of emergency donor services available that when a volunteer is required for an urgent transfusion the chances of one with a donor group card coming forward are high. If there is extreme urgency and the donor presents a Group O card there may be a temptation to use his blood without further test. Danger is, of course, entirely obviated if a direct compatibility test is employed; but in an emergency the doctor, who often finds the collection of a sample of a patient's serum for the test a tedious affair, may be tempted to dispense with it and rely entirely on the evidence of the card that the volunteer is a universal donor. He may regard it as an additional safeguard that this donor has been used before, not realizing that the destination of the previous donation might have been a plasma or serum pool, where a knowledge of the group is immaterial and rechecking is often dispensed with.

Errors in mass-grouping have been estimated to be as high as 10% in some places, and these may be due to either technical or clerical mistakes. In our experience the commonest mistakes have arisen from the presence of cold agglutinins—Group O being reported as A, and A as AB—but we have recently had an instance of a Group AB donor being issued with a Group O card in error by the clerk. There are also many other possibilities of clerical error even with the most careful checking. Since one of the main purposes of mass-grouping in wartime is to segregate into an emergency list selected individuals of Group O who live or work near the bleeding-centres and who can be called upon at short notice, the question arises whether the issue of the Group O card should be permitted to the emergency donor without an independent confirmation of the group.

The possession of a group card gives the volunteer donor a real sense of responsibility, and it is to him a source of satisfaction to know that he is registered in a National Transfusion Service. Moreover, the card is of value when he wishes to transfer to another district, and for these reasons it would be undesirable to limit the issue of these cards in any way. We feel, therefore, that the cards of guaranteed universal donors should be clearly marked "Group O Confirmed" by means of a rubber stamp or preferably with a punch, and that this mark should have a definite significance throughout the country. The fact that the group had been checked by an accepted standard would reduce the risk to the extremely remote possibility of a repeated clerical error, and the donor could be used with confidence in an emergency. This system of double checking could, of course, be extended to all blood groups.

In conclusion, however, we wish to stress that a direct compatibility test *should* be made in all cases.—We are, etc.,

W. H. CANT,
Regional Transfusion Officer, Birmingham.
W. H. MCMENEMEY,
Pathologist, Worcester Royal Infirmary.
A. G. SANDERS,
Regional Transfusion Officer, Oxford.

Hypertonic Sodium Sulphate

SIR,—I would add my voice to that of Dr. Tresilla L. Pires (September 6, p. 355) when, in writing of hypertonic sodium sulphate treatment of wounds, she pleaded for "a wider use of so simple and effective a substance."

I first learnt of this when Dr. Lyth introduced it to the profession in his presidential address to the Yorkshire Branch of the B.M.A. in 1935. I was so struck by it that I there and then decided to try it in my ophthalmic work.

My first case was one of orbital cellulitis resultant on a wound to the upper eyelid which came late into my ward. It cleared as if by magic, though too late to obviate damage to the nerve. I then tried it on corneal ulcers, including those with hypopyon, with almost invariable prompt success. At first I used it in an eyebath as frequently and continuously as the patient could be induced to apply it, but later on a pad of cotton-wool soaked in the solution with a fine wick of the wool introduced between the lids at the inner canthus. The pad is covered with some impervious substance, such as oiled silk, and is kept moist with a pipette by the nurse without moving it from the eye.

Since retiring from my hospital I have seen but little of corneal ulcer, but on my experience up to then I should invariably make sodium sulphate application my first line of attack. The cornea and conjunctiva stand the application of a saturated solution without trouble.

As to insect bites, etc., I was stung on the foot by a wasp. I put on a pad soaked in saturated solution, covered it with gutta-percha tissue, wrapped my foot in a towel to protect the bed-clothes, and went to sleep. In the morning there was no trace of swelling or other inconvenience. This had not previously been my experience with wasp stings.—I am, etc.,

York, Sept 9. PETER MACDONALD.

Voluntary Hospitals

SIR,—In your issue of September 6 (p. 353) Sir Frederick Menzies asks, "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" I should like to put forward three examples; others may add to them.

(1) *Initiative.*—Each member of the honorary staff of a voluntary hospital is free to treat his patients in the way he thinks best. It is fortunate that this has been so, or many of the greatest advances in medicine would have been stamped out as heresies before they had a chance to prove themselves. In the municipal system the amount of initiative allowed is under the absolute control of the resident medical superintendent. Many who occupy this position are men who welcome it, but there are too many others whose sole thought is that nothing shall be done in their hospital which might lay them open to criticism from outside. I cannot withhold sympathy from the latter group; if they had informed criticism alone to face there would be no excuse, but I have some knowledge of the way in which men in their position may be harassed by ignorant and ill-informed critics.

(2) *Independent Criticism by Colleagues.*—The work done by the honorary staff of a voluntary hospital is subject to open comment and criticism by colleagues who are in a perfectly independent position. In the municipal system the personal interests of the junior staff are too dependent on the good will of the R.M.S., and his position in turn is too vulnerable to lay criticism. The inevitable result is a soft pedal on all criticism and a tendency to keep any that does arise strictly within the four walls of the hospital.

(3) *Emphasis on Skill in Treating the Sick as the Highest Quality in a Medical Man.*—Under the voluntary hospital system the highest positions, the honours, and the rewards are enjoyed by those who are foremost in advancing the knowledge and practice of their profession. Under the municipal system promotion usually means curtailment of clinical work and concentration on administrative duties; moreover, the highest honours and rewards go to those who have excelled as administrators rather than to the clinicians or research workers. Were this universal it is hard to see how we could avoid a stultifying influence on the advance of knowledge; for with a few exceptions the most able and brilliant men will naturally follow the path which leads to the highest honours and rewards.—I am, etc.,

Redhill, Surrey, Sept. 13. KENNETH WATSON, M.B.

SIR,—Sir Frederick Menzies asks: "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" This simple question has a simple answer: "There are none." Sir Frederick asks his friends another question: "What they mean by the best features of the voluntary hospital system." Others abler than myself will tell him what he already knows, but I would like to make my little contribution.

The best of our island institutions were founded in the past, and with the passage of time they are modified and adapted to the present age and to present purpose. In their long life they acquire a tradition and prestige which is a human spirit carried on from generation to generation by those who serve within the walls of the institution. It is independent of bricks and mortar. The Houses of Parliament may be destroyed by fire, the Bank of England may be rebuilt, but the spirit which animates these institutions survives, perhaps strengthened. The voluntary hospital system has tradition. This is the first thing.

Some of the voluntary hospitals were founded by religious orders and others by charitably disposed persons. The religious spirit survives and in some sense animates their activities, in some more and in some less, but at least in the sense that it animates the Mother of Parliaments. It is certainly evident in the vocational spirit which finds expression in the nursing staff of the voluntary hospitals, and I would say in parenthesis that the women who work in the voluntary hospitals contribute enormously to the atmosphere that pervades them. The war has brought this home to many of us. The voluntary hospital system depends to an extent on charity. It is customary nowadays to decry charity. It is, however, quite certainly blessed to give, and the impulse is love. To love one's neighbour as oneself and charity are Christian virtues, and these virtues are strong in the tradition and in the present working of voluntary hospitals. Together I account them the second thing in the voluntary hospital system, and their importance cannot be overestimated. The stark realism of Lenin and Hitler has emphasized the interdependence of religion and politics. If the peoples of the world could but accept the Christian philosophy wars would be no more. This, however, belongs to the future, because, as Mr. Wells has said, the teaching of "this Galilean is too much for our small hearts."

The third thing about the voluntary hospital system is personal service. The head of the hospital, generally called the chairman or treasurer, devotes the greater part of his life to this voluntary work. The governors, nursing and medical staff, and the employees all give personal service in varying degree without calculation as to immediate reward. This makes for a personal relationship with the patients, and gives them an affection for the institution and those who work in it. The reputation of a voluntary hospital depends very largely on the quality of the personal service which its members give.

The fourth important feature of the voluntary hospital system is the independence of its units. This makes for *esprit de corps* and encourages initiative. It creates self-reliance and self-dependence both in the institution itself and in every person connected with it. It extends to the patients, who therefore contribute to the funds of the institution. Freedom is said to be the essential feature of democracy. I believe that self-reliance and self-dependence in the great majority of the members of the State are the real foundation of democracy. Such absolutely English institutions as the voluntary hospitals are an integral part of democratic structure. Their survival contributes to the maintenance of British character and to the permanence of our Constitution.

Lastly, there is the medical work done in the voluntary hospitals. The members of the medical staffs include a selection from among the best men in the medical profession, because of the honour and advantage of being attached to a voluntary hospital and because of the effect of the institution on the character of those who work in it. Further, some of the voluntary hospitals provide members of the honorary medical staff with opportunity for teaching and research, and some members of these staffs are among the leaders of the profession, and some contribute to the advance of medicine and so add to the good name of their hospital in this or in other ways. The great majority of the members of the medical staffs are in private practice, general or specialized. This keeps them in contact with the world at large, while it keeps their hospitals in touch with the lives of the people.

I realize shortcomings in the voluntary hospital system, but I see it improving year by year. The improvement can be quickened, and I have no doubt that if it performs its service adequately there is no danger as to its financial support. Indeed, I believe its service will be financially self-supporting if it is made good enough for those who require its help.—I am, etc.,

London, W.1, Sept. 6. GEOFFREY EVANS.

SIR,—Sir Frederick Menzies (September 6, p. 353) asks for a list of virtues found in the voluntary hospital system but which do not occur in the municipal system. I am not among those who believe that the voluntary hospital system is indispensable, and, indeed, I hope to see very drastic reforms in the near future. There is, however, a fundamental principle which I think must not be overlooked in planning a better hospital service. At present the members of the honorary staff of a voluntary hospital are subjected to competition in order to make a living. I fully realize that this is detrimental to the efficiency of the younger members of the staff, who should be obtaining experience without being obliged to worry about making money. But such competition does help senior men to keep up to date.

Nobody outside a lunatic asylum would go into the medical profession with the idea of making a fortune, but most of us need a carrot of some kind in front of our nose, such as promotion or a livelihood, to keep us trotting in the latter years of life. There are, of course, many men for whom the thirst for knowledge is sufficient stimulus for efficiency, but the medical profession cannot rely on being composed entirely of such men.

I believe that if every municipal hospital had a paying block, and if private practice within the hospital was allowed to senior members of the staff, there would be a considerable improvement in the hospital service of the country.—I am, etc.,

London, W.1, Sept. 8. MALCOLM DONALDSON.

SIR,—Surely Sir Frederick Menzies has been unfortunate either in the way he puts his questions or in his circle of friends. I assume he means exactly what he says in the first seven lines of the second paragraph of his letter.

"To be stared at with withering contempt" or to be "overwhelmed with a Niagara-like cataract of words which are entirely meaningless" must be a very odd experience when you seek an opinion. I must confess that so far I have never been treated like this when seeking a variety of information of all sorts. Perhaps, however, he does not mean these remarks to be taken literally. However, let me recommend that he reads the *Report on the British Health Services*, published by P E P in 1937, or the *Lancet* monograph on hospital reorganization, or, lastly, "The Case for a National Hospitals Board," by G. Stewart Smith, *Lancet*, July 26, 1941. I am sure he will find information and possibly opinions tending to supply an answer to the question he poses.—I am, etc.,

Plymouth, Sept. 8. ERIC WORDLEY.

Future of Medical Education

SIR,—As student subscribers to the *Journal*, we would like to express our great appreciation of Mr. Donald McDonald's excellent article on the future of medical education.

It is undoubtedly desirable, as he emphasizes, that there should be a closer relation between the student's pre-clinical (and especially pre-medical) studies and those which engage his attention during the clinical period. One of us has a vivid recollection of hearing a lecturer (not in our own College) informing his botany class that knowledge of the subject-matter of his lecture that afternoon was essential for their examination, but that it did not matter how soon afterwards they forgot it, as they would have no further use for it. Such a desirable relation between preliminary and more advanced studies would, however, seem to require a rather more radical alteration of the curriculum.

We can fully endorse, too, from a little personal experience and much conversation with our fellows from other hospitals, Mr. McDonald's statements regarding the tendency of the specialist to teach from the rare case. "You must examine and learn all about this case—you'll never see another one like it" is an instruction we have heard more than once. We must, however, admit that we ourselves have been fortunate in that the

majority of our own teachers have recognized that the "everyday" case is the one that the student must know thoroughly before concentrating on the rarities. In fact, some of them have actually deplored the reputation, which students from this hospital have earned from examiners, of knowing the "small print"—sometimes to the exclusion of much that is of more practical importance. In this hospital, too, the "lecture," pure and simple, has been very largely replaced by the lecture-demonstration or clinical lecture in the ward—to the general satisfaction of staff and students alike.

On one point, however, we would, like Goethe, crave for "more light." We agree with Mr. McDonald's condemnation of the reasons for which many students enter medical schools, but fail to see how more scholarships will select students "because they will make good doctors." Mr. McDonald must know, as we do, students who can be relied on to pass any examination but whose intellectual ability seems limited to this examination "cramming." The scholarship, too, which will elicit the desirable type of temperament will be, surely, a revolutionary affair. It seems to us that a well-planned and well-administered curriculum might do much during its five to six years to mould temperament in the desired direction.—We are, etc.,

IAN A. J. MCCREADY.
St. Bartholomew's at Friern Hospital, Sept. 8. R. T. ROUTLEDGE.

SIR,—May I take this opportunity to express the hope that "A Medical Student's View" on the future of medical education (September 6, p. 327) will not be accepted as the view of all students. This view is in striking contrast to that of the great teacher which precedes it, where the necessity for less instruction and more education in the wider sense is emphasized; one might be tempted to believe that the majority of students wished to be spoon-fed with courses on the evolution of behaviour, psychology, and sociology.

Early pre-clinical teaching may be "uninformative, and a deadweight on the enthusiasm" of an unimaginative student, and this may reflect on the way it is taught, but not on the inclusion of these subjects in the curriculum. If the student stops to light his pipe and think, there is more to be learnt from dissecting "parts" and reading "Gray" than can be remembered by mnemonics. Ward rounds do not provide the best opportunity for "asking questions and taking part in discussion." We are all too familiar with the type of person who asks all the questions. If the phrase "reading from textbooks has been redundant since the invention of printing" means anything, it is not in accordance with the results, whether judged from the point of view of examinations or of the ultimate production of doctors "blessed with humanity and judgment."

I hope that the future of medical education will not be dependent on more lectures and more people to answer questions. The most valuable source of education is what the student can learn for himself from his patients. The writer of the second of the two articles makes no reference to this except to say that "out-patient clinics are fairly good for this purpose if they are not overcrowded." The general out-patient clinics which I have attended have only been overcrowded with patients; let there be more time spent in bandaging cut fingers and less in listening to expert talk on obscure diseases. The experiences of the midwifery student on the district must remain an outstanding source of the type of education which is required. Are junior house appointments, when the newly qualified doctor has to make his own decisions for the first time, to be ignored as a source of education? Surely the improvement of these facilities of contact with patients is of greater importance than more teaching.

When the medical practitioner has to be the physical (and sometimes spiritual) adviser to men and women of every type the need for a broad outlook is obvious, but this is not to be learnt from a course of lectures. There is no call for a year in the curriculum to be set aside for gaining experience, for those who ask all the questions will gain nothing, and those who do not will find their experience for themselves. The student will be better able to cope with the "maladjusted, possibly mildly neurotic, patient" if he spends a proportion of his time drinking beer in low pubs than if he attended a course on "oecology."—I am, etc.,

A. P. BENTALL,
London, S.W.3, Sept. 8. House-surgeon.

Medical Education, Culture, and State Aid

SIR,—While Prof. J. A. Ryle (September 6, p. 323) laments the decay of medicine as a cultural profession and is anxious to counteract this tendency, the statement is made in your leading article (p. 340) that 45% of university students are in receipt of State grants.

Is it not possible that the cultural degeneracy to which Prof. Ryle bears evidence may be an outcome of this profuse State aid to entry into the profession? It must be obvious that a boy whose parents have the means to put a son to medicine will have more opportunity of exercising a choice of career than one whose career is determined by obtaining a scholarship. Culture is a process of slow and continuous growth from a very early age, largely dependent on many factors, such as environment, heredity, etc., involved in education and not necessarily associated with mere instruction and the possession of a good memory.—I am, etc.,

St. Mawes, Cornwall, Sept. 7. B. H. SHAW.

Planning for Mental Health

SIR,—I was very interested in your leading article in the *Journal* of August 23 and the article, "Planning for Mental Health," in the same number. I have specialized in the treatment of the neuroses and psychoses since 1918, and the results of my psychotherapeutic experience may be of interest.

1. I am entirely in agreement with you that there is an immense need for preventive measures if the problem is to be dealt with at all. I have long ago come to the conclusion that this is the major need, and as the result of practical experience come to the opinion that a great amount of mental ill-health could be prevented by a judicious nation-wide propaganda and the education of prospective parents in the elements of mental hygiene in children.

2. I agree that for successful psychotherapy patients should be caught young. I have urged the need for this for years, but in practice it very rarely happens. This is the fault partly of the parents and partly of the attending doctor. I have long ago been forced to the realization that completely to cure a chronic neurosis in a person, say, over 35 years is a herculean and probably hopeless task. The most that can be hoped for is usually improvement only and/or prevention of further deterioration. This may sound pessimistic, but it is not; it is realistic, and had better be accepted to avoid future disappointment.

3. The number of doctors adequately trained in psychological medicine or having any knowledge of the mechanisms of the neuroses and psychoses is practically *nil*. The vast proportion of medical practitioners are sceptical of the real existence of the psychoneuroses and have no realization of their numbers, their seriousness as illnesses, their symptoms, or methods of diagnosis. They practically never refer such cases to specialists for diagnosis and treatment, and if they do it is after every form of physical treatment has been tried and failed. Frequently it is the patient or his relations who insist in the end.

4. With the exception of two or three post-war years, when there was a greater interest in the psychoneuroses, it is certain that in the last twenty years there has been no change for the better in the state of affairs described in para. 3.

5. You are right in saying that a special type of personality is needed to be successful in this branch of medicine. Infinite patience, sympathy, tact, common sense, and a complete lack of criticism are some of its ingredients. Without these, technical skill and knowledge are useless.

6. You ask whether it is possible to pick out such personalities before they become trainees. In my experience only those spontaneously take up psychotherapy who have some degree of neurosis themselves or who have been cured by psychotherapy. Within my time a number have come, and gone. They could not stand the pace or perhaps the poverty. I feel sure, however, that if the teaching of psychological medicine were really adequate a number of students would make this fascinating branch of medicine their specialty and by so doing reveal the possession of a suitable form of personality.

7. In my experience the practice of psychotherapy requires more sacrifice of time and patience for less financial return and involves more disappointments than probably any other form of medicine. All one's efforts can be nullified by some un-

favourable but unalterable element in the patient's environment. I do not believe that there is a reasonable income to be made regularly except by the very few psychotherapists, and there is certainly no room for more. I do not wish to dissuade anyone from taking up this branch of medicine, but the facts are as stated. I have never made nearly as much as I made in general practice with less effort.

8. I have come to the conclusion that a knowledge of the technique of psycho-analysis is essential whatever form of psychotherapy it is intended to practise. By this knowledge alone can come an understanding of the mechanisms of neurosis and an appreciation of the nature of the underlying mental conflict. Psycho-analysis is the best form of therapy for the young. No other form can equal its results if successful, as they generally are or ought to be. For the middle-aged and elderly a combination of very superficial analysis with some form of suggestion is probably the best and only permissible form of psychotherapy.—I am, etc.,

Leeds, Sept. 1. E. WRIGLEY BRAITHWAITE.

The Mental Defective in the Army

SIR,—Dr. F. J. S. Esher's article on this subject (August 9, p. 187) and the correspondence it has elicited show clearly how ineffective existing legislation concerned with mental defect has proved in practice in discovering mental defectives in the community, and thus, incidentally, preventing their recruitment in the Army. Dr. Allan Warner (September 6, p. 353), referring to three extreme cases quoted by Dr. Esher, asks appositely "how the education authority dealt with them at school, and expresses the opinion that "if the section of the Education Act relating to mentally defective children had been properly administered, they would have been notified to the mental deficiency authority." Dr. Warner, like myself a former education medical officer, knows very well the flaws in that administration and even in existing legislation.

There can be no possible doubt that the ascertainment of defectives in the community and the application to them of the provisions of the Mental Deficiency Act will never be adequate so long as the section of the Education Act relative to mentally defective children is not properly administered. That Act has, of course, no reference to the two lowest grades—the idiot and the imbecile—who are directly certified under the Mental Deficiency Act and who are, in any case, not so likely to be enlisted accidentally in the Army. The Education Act is concerned with feeble-minded children, for whom it is made a duty of local education authorities to provide special schools or classes. The Mental Deficiency Act imposes on education authorities the further duty of notifying to the mental deficiency authority children leaving these special schools or classes when it is thought desirable that they should be dealt with under that Act by way of supervision or guardianship or institutional care.

While it is true that most of the larger cities and towns have provided special schools sufficient at least for the education of a considerable section of their feeble-minded children, others have failed to do so, and in some areas, mostly rural, special schools or classes are not practicable. Although the Act encourages authorities not having a special school to send their children to the special schools of an adjacent area, this provision is for the most part ignored. There is the further difficulty that it is only the children who have attended a special school or class who can legally be notified under the Mental Deficiency Act. An authority that has no special school or class has, therefore, no incentive to discover its defectives and, as a rule, does not discover them.

Obviously there are two remedies for this position. One is that education authorities should be compelled to carry out their duties under the Education Act, so far as special schools or classes can be justified in their individual areas. And the second is that as special schools or classes are admittedly not possible everywhere, it should be made legal to notify any child found to be defective, whether or not he is, or has been, in a special school. The mentality of the child is the prime consideration, whatever type of school he has attended. This second provision, which would require an alteration in the existing law, would also meet the case of the child who is only discovered to be defective late in his ordinary school career—too late, perhaps, to justify admission to a special school.

This suggestion for an alteration of the law, together with others relative to the education of children of subnormal mentality, was put forward just before the outbreak of war by a committee (of which I was a member) appointed at the instance of the Central Association for Mental Welfare, representative of many bodies, social, educational, and medical, concerned with mental defect. In the report of that committee it is stated that one of the greatest obstacles to the efficiency of the Mental Deficiency Act has been this restriction upon notification of defective children.

The remedy for these difficulties is in the future. Meantime Dr. Esher and your correspondents are in search of a method of preventing recruitment of defectives unsuited for Army service which can be applied now. The examiners on a medical board are naturally chiefly concerned with physical fitness, and it is no reflection upon the profession to say that the majority of them have had no experience in the diagnosis of mental defect. As Dr. Warner emphasizes, there are no quick and easy methods of detecting mental defect except in its lowest grades. One can in a rapid survey find only grounds for suspicion, and then reference to an expert for a more definite opinion should be possible. Suspicion may be aroused by the recruit's facial appearance in some cases—so-called stigmata should be ignored—or by his general demeanour or by his sluggish responses or movements. As suggested by more than one of your correspondents, a short reading test may be given, but much will depend on the matter given to be read. There appears to be no reason why examiners on medical boards should not be equipped with a copy of Burt's standardized reading tests for this purpose.

Not every mental defective is unfit for some form of Army service, and even the expert's decision in individual cases may not be easily made. Too much significance should not be attributed to mental age. A case with a relatively high mental age approaching the normal may be quite unsuitable on other grounds—difficult behaviour, lack of initiative or staying power—while one of lower mental age may by virtue of stability be a useful recruit. For that reason I would deprecate the fixing of a minimum mental age, but I agree with Drs. W. J. S. Reid and David Russell (September 6, p. 353) that the age suggested by Dr. Esher is too high and does not admit sufficient latitude in selection. It is most important that the examiner should be able to obtain reliable information as to the possible recruit's history—school history if possible, general social reactions, success or otherwise in work. These, together with the results of personal examination by such tests as he prefers, including, of course, performance tests, should give the examiner a sound basis for decision.—I am, etc.,

Epsom, Sept. 9. HENRY HERD.

Treatment of Impetigo

SIR,—The interesting letters on the treatment of impetigo contagiosa by Dr. F. R. Craddock and Captain M. H. L. Desmarais (September 6, p. 356) persuade me to mention one or two points in the treatment of this far too common disease. As many who suffer from it are poor, expense is a most important factor, while the national necessity for economy in chemicals must also be borne in mind. Dr. Craddock refers to 20% gentian violet—an excellent treatment; but the 2% aqueous solution of gentian violet used for years in this department is just as efficacious, is cheaper, and is less liable to irritate the skin. With this method the average time for cure is just over ten days, all types of the disease included. Squibb's compound quinolor ointment, which Captain Desmarais mentions, is invaluable, particularly for impetigoes of the scalp and for those cases of the subacute type which tend to develop into sycosis barbae, but it is expensive, and some patients' skins do not tolerate it well. The application of sulphanilamide, either in powder or paste form, gives good results, but appears to be no more efficient than gentian violet, is much more expensive, and seems wasteful at a time when supplies are required for more urgent purposes. Finally, the classic treatment with ammoniated mercury, either as ointment or paste, though often successful, tends in many instances to cause a chemical dermatitis with a spread of the infection, especially if an ointment is used.—I am, etc.,

Skin Department, Royal Infirmary, Edinburgh, Sept. 8. G. A. GRANT PETERKIN.

SIR,—I was interested in the number of articles on the treatment of impetigo contagiosa in your recent issues, and while I agree with continual changes in the interest of progress in the therapeutics of dermatology, do we not find that in the simple conditions like impetigo contagiosa many "new" medicaments with so many different proprietary names tend to lead us astray and into treatment which is prolonged and often costly? Why not go back to the "old" treatment taught to many of us as students and use ung. hydrarg. ammon. dil. This should be applied twice daily and only following removal of the crusts and scabs by dry hot boric-lint foments. The condition invariably clears in seven to ten days.

In children and in those adults where there is difficulty in confining the areas of infection and where there is a tendency to auto-infection, I have found that after two to three days of the above treatment the application of lotio eau d'Alibour N.F. (lotio cupro-zincica) t.d.s. has a most gratifying effect: the condition is immediately arrested and cure in ten days can be expected. The application of adhesive plaster over a wool pledget soaked in cupro-zincica, as suggested by Dr. M. E. J. Packer (September 6, p. 364), could be used in those cases where the areas are small and isolated, but I should think that adhesive plaster would tend to devitalize the healthy epidermis and so form a nidus for further infection, particularly on the face, where the condition is commonest. I agree with Captain M. H. L. Desmarais (September 6, p. 356) that rest and institutional treatment, particularly for children, help.

Might I suggest that the temperature observed by Dr. Noel C. Bleasdale (September 6, p. 363) in his cases treated with mercurochrome may have been due to a mild streptococcal septicaemia or to a nephritis, which is a complication of impetigo.

I would like to tabulate the following few points: (1) Impetigo contagiosa is usually a mixed infection with either staphylococci or streptococci predominating—ung. hydrarg. ammon. dil. clears these where the former preponderate and cupro-zincica where the latter are in ascendancy. (2) Treatment with sulphapyridine or other sulphonamide may be necessary in resistant cases and in those cases where a temperature develops. (3) Resistant cases with a temperature should have a chemical analysis of the urine done. (4) Auto-inoculation is common, and detailed instructions must be given to avoid this, and for this reason institutional treatment with rest is often advisable.—I am, etc.,

Sheffield, Sept. 9. E. BERSTOCK.

Bronchogenic Tuberculosis

SIR,—Your annotator has misinterpreted (p. 343) my use of the expression "bronchogenic tuberculosis" (p. 154), which was intended to indicate the mode of spread of the disease and not its origin. Although his further comments point to rather superficial reading of my paper, a few words on the use of the expression may be generally helpful. The suffix *-gen*, of Greek derivation, signifies "-born" or "of such a kind" (Concise Oxford Dictionary). The bacilli which cause a fresh pulmonary lesion in an already infected person may come from the outside air (aerogenous lesion), from the blood stream (haematogenous lesion), or by the bronchi from a focus which may itself originally have been aerogenous or haematogenous. A focus arising in a bronchus gives rise to tuberculous bronchitis, which is not an essential feature of the early lesion that spreads later by the bronchi, and may itself be haematogenous in origin. From this it appears that the expression "bronchogenic tuberculosis" has no *raison d'être*. Its use, though not strictly etymologically correct, was therefore unlikely to cause confusion in connexion with the common type of tuberculosis that spreads by the bronchial system. Moreover, such an interpretation of *-gen* seems in keeping with the meaning "of such a kind." Your annotator states that "the origin of such a lesion [isolated pulmonary focus] is still obscure and may well be haematogenous." That this is a very common origin was definitely established by Pagel as far back as 1930,[1] and was clearly indicated in my paper to which your annotator refers.

I hope it will be generally agreed that a distinct term for the common type of tuberculosis that spreads by the bronchi is necessary. Three other alternatives were available. The use of "phthisis" is condemned by some because its meaning of "consumption" is not specific. I frankly lacked the courage to introduce "bronchophorous tuberculosis," which would be etymologically accurate. And "bronchovectorial tuberculosis," containing a hybrid word, would have been even less acceptable. The term "bronchogenic" in this connexion is not original. Thus the distinguished American physician, James Alexander Miller, uses it in the expression "bronchogenic phthisis." If "phthisis" is rejected, "bronchogenic tuberculosis" appears to be a case of *faute de mieux*.

I should like to comment on one further relevant point. Contrast plays a very large part in radiological technique. Texture as well as size of focus matters in the final result. The same technique will show up a minute calcified focus or a small fibrotic lesion, but not necessarily a larger infiltration. Your annotator states that "the films so obtained [by miniature radiophotography] are sufficiently detailed to show even very small lesions." Does this apply to very small infiltrations? I find it difficult to reconcile his statement with that of Dr. Sparks, whose paper he quotes. "The image [of miniature radiophotography] was, in fact, reminiscent of that procurable in a chest radiograph of about twenty years ago." Careful study of the cases published in comparisons of miniature radiophotographs with full-size films fail to show among them any definite cases of early bronchogenic tuberculosis. Those workers who nevertheless affirm that miniature radiophotography is quite satisfactory for the detection of early pulmonary tuberculosis must think of "early pulmonary tuberculosis" as pulmonary tuberculosis in a person with no symptoms, or with symptoms that have not yet led him to consult a doctor. Such a definition will include many people with lesions far from early, and is therefore likely to do a disservice to the cause of mass radiography and the control of the disease.—I am, etc.,

Hounslow, Middlesex, Sept. 8. G. GREGORY KAYNE.

[1] "Lungentuberkulose" in *Handbuch d. spez. Path. Anat. u. Histol.*, ed. Henke and Lubarsch, Vol. 3, Part 2, pp. 225, 384, 413.

Cardiac Arrest during Anaesthesia

SIR,—As I intimated in my article on cardiac massage, I expected criticism. Far from wishing to evade Dr. H. J. Brennan's question, I thought that my letter of August 16 (p. 243) would have given him the data he required.

Obviously, it is ridiculous to assume that anaesthetists located in widely separated surgical centres (six English cities) are "grossly incompetent." Further, it should be obvious that these anaesthetists would employ the anaesthetic agents which are in vogue in England. In other words, my experience should represent a good cross-section of anaesthetists and anaesthetics. This being so, I am sure that Dr. Brennan will understand how impossible it is for me to state that no chloroform has been used in this or that case.

I wonder whether surgeons for whom Dr. Brennan anaesthetizes pry into the anaesthetic room and watch what drugs are being employed. I have little doubt that his surgeons also are too occupied in preparing for the operation, and I am sure they have too much confidence in Dr. Brennan's judgment to warrant such intrusion.—I am, etc.,

London, W.1, Sept. 9. HAMILTON BAILEY.

*** This correspondence is now closed.—ED., *B.M.J.*

Status Lymphaticus and Sudden Death

SIR,—It has been contended that a diagnosis of status lymphaticus is not sufficient as a cause of death; but, in spite of the eminence of the members of the Committee that reached this conclusion, there are many who doubt the truth of their decision.

I have recently performed necropsy on a soldier aged 30 who collapsed and died suddenly while on duty. He was a well-built man with no history of previous illness. Indeed, he was quite famous as an athlete. The relevant post-mortem findings were as follows: narrow aorta; spleen rather larger than normal, with very prominent Malpighian bodies; mesenteric glands enlarged and numerous; two small areas of white fibrous tissue in the posterior wall of the left ventricle; and a thymus that weighed 5½ oz. (fortunately I have three witnesses to this remarkable finding.). In every other particular the body appeared to be healthy.

Is status lymphaticus to be regarded as having killed this man, or are the small areas of myocardial fibrosis to be blamed? The latter were so small that it is difficult to suppose that they had

much bearing on the matter: but when I came to read up the whole subject I found that Vasiliu (*Man. Anat. patol. clin.*) states that in cases of sudden death of persons with status lymphaticus interstitial myocarditis (or cellular infiltration of the myocardium) is present. Unfortunately, I did not keep any portion of the heart for histological examination, either in this case or in any other case of status lymphaticus I have seen.

As far as I am aware the committee mentioned above did not investigate the structural changes in the heart; and I write this note in the hope that every case of status lymphaticus will in future be subjected to detailed histological examination.—I am, etc.,

London, W.1, Sept. 6. A. PINEY.

The Thomas Splint

SIR,—I heartily agree with Major Hosken's remarks on the use of the Thomas splint (September 6, p. 355).

The first-aiders at my post can apply the splint in under ten minutes. They have been instructed to work in teams of two. The splint has been applied in the dark, working with gas masks on, and with the use of one hurricane lamp only. It was assumed that the electric current had failed. Just recently, at a Red Cross inspection by a well-known surgeon, one team was highly commended for the way the splint had been applied.

The practice has come in very useful, for a fractured femur was brought into the post and a Thomas splint was applied; the patient was comfortable and did very well subsequently at the hospital to which he was removed. Incidentally, this patient was so grateful that he offered £5 to the post, which, of course, could not accept the money.—I am, etc.,

LOUIS SHELDON,
Willesden, Sept. 6. M.O. in Charge, First-aid Post.

Anglo-Soviet Medical Committee

SIR,—An Anglo-Soviet Medical Committee has been formed to arrange the interchange between the medical profession of this country and the Soviet Union of the latest material on the clinical and scientific aspects of medicine. Such an interchange can be of considerable value at the present time to members of the profession in both countries, and we believe that a large number of doctors in this country would be willing to co-operate in the work. Those interested and those prepared to assist by summarizing and abstracting English articles and translations of Russian work should write to the Hon. Secretary, Anglo-Soviet Medical Committee, c/o the Royal Society of Medicine, 1, Wimpole Street, W.1.—We are, etc.,

DAWSON OF PENN. JOHN A. RYLE.
W. E. GYE. WM. FLETCHER SHAW.
F. GOWLAND HOPKINS. ALFRED WEBB-JOHNSON.
PHILIP MANSON-BAHR. C. M. WILSON.

Sept. 12.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Titles of the degrees of M.B., B.Chir. have recently been conferred by diploma on Mrs. A. E. Burns of Newnham College.

UNIVERSITY OF LONDON

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The following scholarships have been awarded for 1941:

St. Dunstan's Medical Exhibition: S. R. Yeates. *A. M. Bird Entrance Scholarship:* B. M. Bingham. *Mrs. George M. Smith Scholarship:* K. Corbishley. *Extra Mrs. George M. Smith Scholarship:* H. Mushin. *Mabel Sharman-Crawford Scholarship:* B. M. Buck. *MacIntyre Evans Scholarship:* P. M. E. Cook. *Sarah Holborn Scholarship:* O. Cooke. *Special Sarah Holborn Scholarship:* Q. M. F. Adams. *Dr. Margaret Todd Scholarship:* E. C. C. Horburger. *A. M. Bird Scholarship for Clinical Studies:* R. M. Haslam. *Alfred Langton Scholarship:* B. J. Goff. *Ellen Walker Bursary:* K. N. Berger. *Special Ellen Walker Bursary:* R. N. G. Holloway and J. C. M. Yuill. *Flora Murray Bursary:* E. E. Simpson. *Emma Beilby Bursary:* B. D. Owens. *Special John Byron Bursary:* I. Hewitt. *A. M. Bird Postgraduate Scholarship in Pathology:* C. Thomas, M.R.C.S., L.R.C.P.

Obituary

HASTINGS GILFORD, F.R.C.S.

We regret to announce the death of Mr. Hastings Gilford at the age of 80. He practised for many years as a surgeon at Reading and was well known for his thoughtful writings on disorders of growth and development and on various aspects of the problem of cancer.

He was born at Melton Mowbray in 1861 and studied medicine at Guy's Hospital, whence he qualified M.R.C.S., L.R.C.P. in 1887. He took the F.R.C.S. in 1889, after working as clinical assistant at the Evelina Hospital for Sick Children. He was for many years surgeon, and afterwards consulting surgeon, to the Reading Dispensary and a vice-president of the Reading Pathological Society. During the last war he worked as surgeon-in-charge of the Sutherland War Hospital.

Hastings Gilford joined the British Medical Association in 1889 and was for years a regular participant in the scientific work of the Annual Meetings; between 1901 and 1904 he contributed six papers to the Surgical and other Sections. His book *Disorders of Post-Natal Growth and Development* appeared in 1911; in 1913 he read a paper at the seventeenth International Congress of Medicine on "The Influence of the Ductless Glands on Development," and in the same year he was appointed a Hunterian Professor by the Royal College of Surgeons of England and lectured on "The Nature of Old Age and of Cancer." Thenceforward his mind was almost continuously occupied with the origin of tumours. His book *Tumours and Cancers: A Biological Study*, was published in 1925, and another, *The Cancer Problem and its Solution*, in 1934, and many letters from his pen on this subject appeared in the *British Medical Journal*. Relying solely on the clinical and post-mortem observations made during the last hundred years, he rejected the vast mass of information that has emerged from laboratory experiments. His view was that our civilization makes for degeneration; that everywhere around us, in our hospitals and charitable institutions, movements are at work which act benevolently on the individual but malevolently on the race; in short, that sentimentality prevails over common sense, to the detriment of civilized man. The effect of this general degeneration, he held, was to produce a degradation of cell structure, a precancerous condition in which the cells, if left to themselves, tend to die out, but under suitable stimuli take on the abnormal proliferation obtaining in cancer. In his last letter published in these columns (July 2, 1938) Mr. Gilford proclaimed anew his faith that not only were the causes of cancer to be found, but that they had already been found and were now being sorted out and investigated. "Cancer is not one disease but a vast group of diseases. Cancers are primarily of internal origin, as contrasted with the bacterial diseases, which are primarily of external origin. Cancers vary in kind with the nature or species of tissue or of animal, so that cancer of one species of tissue differs from that of another, and cancer of one species of animal from that of another species. As with the bacterial diseases, the causes in general are twofold: (*a*) predisposing, and (*b*) activating." This idea lay at the centre of an argument which he had often expounded before at great length. Brimful of his subject, he could not realize that prolixity lost him many readers.

Dr. AENEAS ROSE, medical officer of health, East Barnet, who died on August 26, was a son of the Highlands, his father having been chief forester to the Duke of Atholl. He was educated at Edinburgh University, where he graduated M.A. with first-class honours in moral philosophy, and became a master at Edinburgh Academy. While continuing to teach Rose studied medicine, and took his M.B., B.Ch. in 1906. After holding house appointments at the Queen's Hospital, Hackney, and Great Ormond Street Hospital, he settled in New Barnet, where he quickly built up an extensive practice, becoming also in 1924 medical officer of health to the urban district council. Rose was a man of brilliant attainments coupled with social charm and a gift for entertaining that made him both a delightful host and a welcome guest. Children of all ages adored him, and nothing gave him

greater pleasure than the tea-parties to which he invited his young friends in the school holidays. During the war of 1914-18 he served as a surgeon in the Royal Navy, and was for some time on the staff of Dartmouth College, a post for which he was admirably fitted. He took a very active part in the work of the Barnet Division, B.M.A., of which he was chairman in 1933-4 and 1939-41, and it was largely due to his efforts that the yearly programmes invariably contained the names of many eminent lecturers. If the annual dinner which opened the winter session was an outstanding success it was mainly because Rose had a hand in organizing it. Outside his professional activities he was an enthusiastic fisherman, and all his leisure was spent in fishing the rivers of Hertfordshire or those of his beloved Scotland. He will be greatly missed in New Barnet both by his patients and by his professional colleagues. Of few can it be more truly said: he was a brilliant scholar, a great sportsman, and a prince of good fellows.—W. G. H.

Mr. OSWALD TILSON DINNICK, F.R.C.S.Ed., who had been practising for many years at Launceston, Cornwall, died there on September 4 after a brief illness. He was born in Canada of Cornish ancestry, and graduated at Toronto University as M.B. in 1904. After holding resident appointments both in Toronto and in New York, and acting for a while as a ship surgeon, he came to this country, took the Conjoint diplomas and the Edinburgh Fellowship in surgery, and worked several years at the Royal Cancer Hospital in the Fulham Road, London. Two or three years before the war of 1914 it was discovered accidentally (in the course of a life assurance examination) that he was suffering from glycosuria, which prevented him from joining the R.A.M.C., though he actually did see some war service in a voluntary capacity under the Red Cross. Most of the war period, however, was spent in the Royal Cancer Hospital as surgical registrar, where the absence of most of the surgical staff on service gave him very wide operative experience under the tuition and encouragement of Sir Charles Ryall, then senior surgeon. After the war his illness progressed, and he was actually in coma when the first consignment of insulin reached England from Canada, just in time to save his life and allow him many years of useful service to his fellow men in Cornwall. A fine natural surgeon, and a ready-witted amusing companion, he was a very well-read and cultured man, with many outside interests as well as a first-rate knowledge of his profession; he was also well known as a raconteur. Mr. Dinnick is survived by his second wife (*née* Mitchell), also a member of our profession.

Dr. GUY EDWARD MILLS WOOD, formerly medical officer to Merchant Taylors' School, died on September 4 at Hungerford, Berks. He was born in London on February 5, 1869, and from Rugby School went to study medicine at the Newcastle-upon-Tyne College of Medicine. He took the English Conjoint diplomas and the M.B. of Durham University in 1890, and many years later obtained the M.R.C.P.Lond. Between 1890 and 1893 he held a succession of house appointments at University College Hospital and the National Hospital, Queen Square, and was then for five years senior assistant at Rainhill Asylum, Lancashire. He came to London to take up the post of resident medical officer at the Charterhouse (Sutton's Hospital); in 1913 he was appointed medical officer to Merchant Taylors' School and medical officer in London for the Merchant Taylors' Convalescent Homes, Bognor. During the last war Dr. Wood served as civilian medical officer at the Fulham Military Hospital.

The North-East Ulster Division has lost a staunch member by the death of Dr. DAVID HUEY, of whom an obituary notice appeared on September 6. S. M. B. writes: Although one of the busiest of practitioners, he had the proud record of never having missed a Divisional meeting in the period between the last war and the present one and invariably appeared fifteen minutes before the stated time of the meeting. A past chairman of the Division, for years he represented it at the Annual General Meeting. He had all the best attributes of the old family practitioner, and kept himself familiar with the modern trend in medicine. He had the distinction of becoming an F.R.C.S. of Edinburgh at the age of 66. His genial smile and bluff personality will be missed by his colleagues in Northern Ireland and by the many friends he met each year at the Annual Meeting.

The following well-known medical men have died abroad: Dr. PAUL FERDINAND SCHILDER, aged 54, clinical director in the psychiatric division of the Bellevue Hospital, research professor of psychiatry at New York University College of Medicine, and one of the founders and past president of the Society for Psychotherapy and Psychopathology; Rear-Admiral WILLIAM CLARENCE BRAISTED, F.R.C.S.Ed., formerly Surgeon-General of the United States Navy, aged 76; and Dr. JOHN JOSEPH MACPHEE, emeritus professor of neurology at the University of Vermont College of Medicine, aged 80.

The Services

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Commander ARCHIBALD NEWLANDS FORSYTH, R.N., who is reported missing, presumed killed on active service, was the son of the late Mr. and Mrs. Alexander Forsyth of Aberdeen. He was educated at Robert Gordon's College, Aberdeen, and at the University of Aberdeen, graduating M.B., Ch.B. in 1926. Two years later he entered the Royal Navy as surgeon lieutenant, was promoted to surgeon lieutenant-commander in 1934, and to surgeon commander last year. In March, 1940, the King granted him permission to wear the Insignia of Chevalier of the Order of Maritime Merit conferred upon him by the President of the French Republic in recognition of valuable services rendered in connexion with the rescue of survivors from the French steamer *Yolande* when wrecked on the coast of Shantung, China, on March 6, 1938. Surgeon Commander Forsyth was a member of the British Medical Association. He leaves a widow and one daughter and one son.

Surgeon Lieut. RALPH MORTON CALDER, R.N.V.R., who is reported missing, presumed killed, on active service, was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1935. He had held the posts of house-physician at the Western Infirmary and the Royal Hospital for Sick Children, Glasgow, and house-surgeon at Ayr County Hospital. He was awarded a postgraduate scholarship in experimental pathology by the Medical Research Council in 1937-8, and was a University of London Graham scholar in pathology at University College Hospital Medical School. In 1939 he contributed an article on splenic tissue to the *Journal of Pathology and Bacteriology*, and as recently as August 9 this year he reported a case of allergic shock following a Schultz-Charlton test in the *British Medical Journal*. He became a member of the British Medical Association soon after qualification. On the outbreak of war he joined up for service as an officer of the R.N.V.R.

ROYAL ARMY MEDICAL CORPS

Prisoners of War

Captain Ian MacDougal Guthrie Stewart.
Lieut. Louis Falconer Smith.

DEATHS IN THE SERVICES

Surgeon Captain EDWARD BUTLER PICKTHORN, R.N. (ret.), died at Culmington, Shropshire, on August 27. He was the youngest son of the late Inspector-General Thomas Russel Pickthorn, R.N., and qualified M.R.C.S., L.R.C.P. in 1892. He entered the Royal Navy soon afterwards, became fleet surgeon in 1904 and surgeon captain in 1918. He served throughout the war of 1914-18, receiving the medals. He leaves a widow.

Lieut.-Colonel KENNET BRUCE BARNETT, R.A.M.C. (ret.), died at Beaconsfield on August 31, aged 73. He was born at Hollywood, Belfast, on September 22, 1867, and was educated at Queen's College, Belfast, graduating M.B., B.Ch., and B.A.O. of the Royal University of Ireland in 1892. He also studied in Dublin and London, and took the F.R.C.S.I. in 1904. Entering the Army as surgeon lieutenant in 1894, he became lieutenant-colonel in 1915, and retired in 1919. He served in the Tirah campaign on the North-West Frontier of India in 1897-8, and received the Frontier medal with two clasps.

The Minister of Health has issued an Order, which came into effect on August 25 (Statutory Rules and Orders, 1941, No. 1294), requiring any person employed as a nurse in a mental institution to continue in such employment until his services are dispensed with. Conditions in regard to exemption and other matters are set out in the Order, which may be obtained from H.M. Stationery Office (price 1d.).

Medical Notes in Parliament

Silicosis and Anthracosis

On September 9 Mr. J. GRIFFITHS asked the Secretary for Mines whether any further measures were being taken to prevent silicosis and anthracosis among coal-miners. Mr. GRENFELL said that in regard to stone drifts and headings the measures recommended by the Royal Commission were being applied wherever the conditions so required; but the provision of the apparatus was not enough, and there was still need not only for the managements but for the workmen and subordinate officials to see that it was used more regularly and effectively and kept in good order, and he appealed again for their co-operation. Very prolonged and thorough investigation had been directed to the conditions associated with the incidence of the disease, and the Department were hoping for enlightenment and guidance from the report soon to be forthcoming from the committee of the Medical Research Council. Meantime, the chief undertaking in the anthracite area of South Wales in consultation with the divisional inspector of mines had issued to all its officials a far-reaching code of instructions about precautionary measures, and this had been made known to the representatives of the workmen, on whose co-operation they must largely depend in seeking to bring about a change in the long-standing methods and customs of their work. He was hopeful that this scheme of co-operative effort would prove successful, although a standard set of statutory regulations might well be necessary later when the position was clearer.

Blood Transfusion

Mr. ERNEST BROWN, Minister of Health, on September 9 informed Sir Robert Gower that considerable numbers of blood transfusions, for which both blood and plasma were required, had been given in dealing with air-raid casualties and Service patients, and increasing use was being made of transfusion therapy in hospital practice generally. The existing donor panels and their associated blood stores, together with the plasma produced at the processing centres, should provide adequate resources for casualties on a considerably larger scale than were experienced last autumn and winter.

Allocation of Medical Personnel

In reply to Sir E. Graham-Little on September 11 Mr. ERNEST BROWN said the Central Medical War Committee continued to act as a supply committee in providing doctors required by the various civilian and military services. It was not in any way superseded by the Medical Personnel (Priority) Committee presided over by Mr. Shakespeare, although in selecting the individual doctors it would naturally conform with any decisions taken by the Government on the recommendation of that committee as to the order of priority in which the demands of the various services were to be met. It was not intended that an appeal from a practitioner should be entertained by the Medical Personnel (Priority) Committee.

Number of Evacuated Children.—On September 9 Mr. BROWN told Colonel Carver that the estimated number of evacuated children now in the reception areas, compared with six months ago, was as follows:

	Unaccompanied Children	Children with their Mothers
February 28	490,000	346,000
August 31	450,000	300,000

Distribution of Oranges.—Major LLOYD GEORGE announced on September 11 that a scheme had been prepared for distributing any oranges which might become available. Children under 6 would receive priority. Distribution would be limited to one or more areas in rotation, and for the first seven days after oranges were in the shops they would be available only for the children. Difficulty of distribution would occur if the oranges were sent direct to maternity and child welfare clinics.

Medical Certificates for Miners.—On September 9 Mr. T. MORRIS asked the Secretary for Mines whether his attention had been called to the refusal of medical certificates by some doctors in Wales for miners who had been ill for one day and who needed such certificates to secure the payment of the 1s. a day attendance bonus. Mr. D. GRENFELL replied that the general question of furnishing medical certificates had been raised by the British Medical Association, and was receiving consideration by the Departments concerned. In view, however, of the decision last week regarding the payment of the bonus, the question of certificates had ceased to be important in this connexion.

Fortification of White Flour.—Major LLOYD GEORGE stated on September 10 that the proposal to add calcium to white flour had not been abandoned. Fortification of white flour with vitamin B_1 had begun in mills supplying South Wales and would be extended to other districts soon.

EPIDEMIOLOGICAL NOTES

Discussion of Tables

Owing to difficulties arising out of war conditions a considerable time-lag has existed between the publication of the weekly summary of infectious diseases and the week for which the returns were recorded. It is now possible to reduce this interval by one week, and accordingly the statements for two weeks are given this week.

The incidence of measles has continued to fall, and the number of notifications for the week ending August 30 was the lowest figure recorded in England and Wales since notification of this disease began nearly two years ago. The notifications of scarlet fever and diphtheria have shown a small increase, and mark the beginning of the seasonal rise of these diseases. At present the rising trend is shown only by the northern counties, the largest increase in both diseases being recorded in Lancashire. In Scotland the increase in diphtheria is fairly general, although two-fifths of the total cases were reported from Glasgow. Whooping-cough has remained almost stationary in England and Wales since the large decrease in the number of cases recorded in the week ending August 2. The present notifications of this disease are a little more than three times those of last year. The increased prevalence reported from Scotland was mainly due to the experience of the towns of Greenock and Glasgow. The number of notifications of cerebrospinal fever has declined, and the figure of 99 for England and Wales was the lowest since the first week of January, 1940.

Dysentery

The number of cases of dysentery has fallen during both of the weeks reviewed. The largest of the local outbreaks during the week ending August 23 were: Essex 28, all in Colchester M.B.; Gloucestershire 26 (Bristol C.B. 25); Northamptonshire 16 (Northampton C.B. 8 and Northampton R.D. 8); Suffolk East 40 (Leiston cum Sizewell U.D. 34—this district had an outbreak of 37 cases during the week ending August 2). During the week ending August 30 there were 20 cases in Bristol C.B., and this was the only large outbreak in the country. The increase in the notifications for Scotland was due to outbreaks in the counties of Lanark and Renfrew.

Poliomyelitis

The number of cases of poliomyelitis has declined during August. Only two areas had more than one case during the last week of the month—Lincoln (Lindsey): Lincoln C.B. 2; Buckinghamshire: Aylesbury M.B. 2.

Paratyphoid Fever

An outbreak of paratyphoid fever in Bristol C.B., which had its origin in a girl who handled food in a catering factory, resulted in 39 and 83 cases respectively during the weeks reviewed. In the second week the cases from Bristol were almost half of the total reported in the whole country.

Tuberculous Meningitis in South Wales

The recent quarterly report of the Cardiff and County Public Health Laboratory revealed that a large increase in the number of cases of tuberculous meningitis has occurred. The number of cases for the first six months of this year was 29, as compared with 11 and 14 for the whole of 1939 and 1940 respectively.

No. 34

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	112	10	38	2	8	131	6	30	—	8
Deaths		—	—				—	1		
Diphtheria	746	29	202	17	31	829	30	346	28	25
Deaths	22	2	5	1	5	12	1	8	—	1
Dysentery	170	25	41		—	40	4	46		2
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	—		—	1	—	—		—
Deaths		—	—				—	—		
Enteric fever*	49	1	2	11	5	137	6	18	4	—
Deaths	2	—	—	—	—	1	—	—	—	—
Erysipelas		—	41	10	4		20	41	4	3
Deaths		—	—				—	1		
Infective enteritis or diarrhoea under 2 years										
Deaths	32	5	7	22	7	33	4	20	9	4
Measles	1,454	62	17	76	6	6,688	47	320	—	1
Deaths	—	—	1	1	—	5	1	3	—	—
Ophthalmia neonatorum	92	5	19	—	—	96	5	13	—	1
Deaths										
Paratyphoid A and B ..	195	6	9	—	—					
Deaths	1	—	—	—	—					
Pneumonia, influenzal†	372	14	3	—	2	349	21	—	1	4
Deaths (from influenza)	4	10	—	—	3	6	2	—	—	—
Pneumonia, primary ..			126‡	7				96	3	
Deaths		—		6	—		19		5	2
Polio-encephalitis, acute	—	—				9	—			
Deaths		—					—			
Poliomyelitis, acute ..	24	2	3	4	1	39	—	4	—	—
Deaths		—	—				—	—		
Puerperal fever ..	—	—	17	2	1	1	1	13	4	—
Deaths		—					—			
Puerperal pyrexia ..	118	6	15		—	147	11	17		1
Deaths										
Relapsing fever ..	1	1			—	—	—			—
Deaths										
Scarlet fever	811	26	159	23	21	1,257	45	147	42	53
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	3,144	240	54	38	3	1,056	9	100	—	8
Deaths	19	3	2	2	—	5	1	6	—	—
Deaths (0–1 year) ..	241	21	52	31	22	266	41	56	21	20
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,637	462	549	147	126	3,838	612	514	140	111
Annual death rate per 1,000 persons living			12·0	9·8	§			10·4	9·3	9·7
Live births	5,421	459	871	330	210	5,416	877	819	314	215
Annual rate per 1,000 persons living ..			17·7	21·9	§			16·6	21·0	18·8
Stillbirths	198	25	29			190	20	31		
Rate per 1,000 total births (including stillborn)			32					36		

* Includes paratyphoid A and B for Eire and Northern Ireland.
† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
‡ Includes two cases of pneumonia for Scotland not otherwise notifiable.
§ Owing to evacuation schemes and other movements of population the birth and death rates for Northern Ireland are no longer available.

No. 35

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 30.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	99	7	39	2	3	111	7	21	—	2
Deaths		—	2				1	4		
Diphtheria	805	27	232	11	30	908	51	325	21	16
Deaths	24	—	5	—	—	20	—	12	—	3
Dysentery	82	11	56		—	66	1	49		1
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	3	—	1		—	2	—	1		—
Deaths		1	—				1	1		
Enteric fever*	68	8	2	3	10	122	6	18	3	1
Deaths	2	—	1	—	—	1	—	—	—	—
Erysipelas		—	54	6	3		18	48	2	2
Deaths		—	—				1	1		
Infective enteritis or diarrhoea under 2 years										
Deaths	35	1	15	19	4	27	—	11	12	11
Measles	1,112	37	16	72	3	5,912	68	274	—	52
Deaths	—	—	—	—	—	8	—	2	1	1
Ophthalmia neonatorum	87	5	16	1	1	85	5	27	—	1
Deaths										
Paratyphoid A and B	197	3	17	—	—					
Deaths		—	—	—	—					
Pneumonia, influenzal†	363	15	7	—	—	312	19	4	—	6
Deaths (from influenza)	6	8	3	—	1	6	—	—	—	—
Pneumonia, primary ..			145‡	2				118	3	
Deaths		—		5	4		19		5	—
Polio-encephalitis, acute	5	1				4	—			
Deaths		—					—			
Poliomyelitis, acute ..	23	—	4	4	—	31	—	3	—	—
Deaths		—	—				—	—		
Puerperal fever ..	1	1	14	5	1	4	4	16	—	2
Deaths		—					—			
Puerperal pyrexia ..	135	7	17	1	3	124	13	13	—	—
Deaths										
Relapsing fever ..	—	—			—	—	—			—
Deaths										
Scarlet fever	958	32	164	29	30	1,194	37	150	30	34
Deaths	1	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough ..	3,173	263	78	36	2	970	9	75	—	8
Deaths	11	2	2	2	2	7	—	1	1	2
Deaths (0–1 year) ..	254	21	73	36	21	258	24	52	31	26
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,403	392	517	163	110	4,173	652	511	151	116
Annual death rate per 1,000 persons living			11·3	10·8	§			10·3	10·1	10·2
Live births	4,789	410	782	297	196	5,158	730	822	388	214
Annual rate per 1,000 persons living ..			15·9	19·7	§			16·6	25·9	18·7
Stillbirths	190	5	28			200	24	38		
Rate per 1,000 total births (including stillborn)			35					44		

* Includes paratyphoid A and B for Eire and Northern Ireland.
† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
‡ Includes four cases of pneumonia not otherwise notifiable.
§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

Recruitment for the Sudan Medical Service, which has been suspended since the outbreak of the war, is to recommence. A notice of a vacancy will be found in our advertisement columns.

The address of the National Radium Commission office is now c/o Westminster Hospital, St. John's Gardens, London, S.W.1. Telephone: Victoria 8161, Extension 72.

The name of Dr. George McCracken, medical practitioner, Manchester, has been brought to notice for brave conduct in civil defence.

A sympathetic obituary notice of Sir D'Arcy Power appears in the *New England Journal of Medicine* of July 3.

A pamphlet entitled "Clothing Coupon Quiz: Answers to Questions on the Rationing of Clothing, Footwear, Cloth, and Knitting Yarn" was issued last week by the Board of Trade and is published by H.M. Stationery Office, price 2d. This provides ready reference to official rulings on the many questions put to retailers and to the Board of Trade since the introduction of the clothes rationing scheme. The coupon requirements for the clothing needs of man, woman, and child are clearly set out in tables. There is also a list of coupon-free articles.

Arrangements are being made in Eire for the manufacture of anaesthetics. For months past hospitals and chemists have found it difficult to secure adequate supplies, especially of ether.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Treatment of Phosphorus Burns

Major-General T. S. COATES, in reply to the inquiry about treating phosphorus burns (September 6, p. 363), writes: (1) Wash the burn immediately with a solution of sodium carbonate (two tablespoonfuls to a pint of water). This treatment neutralizes any phosphoric acid formed as the result of the combustion of phosphorus, and partially destroys any free phosphorus present. (2) To free the burn from all traces of phosphorus, wash with 1% solution copper sulphate. Copper sulphate combines with free phosphorus, forming copper phosphide, thus preventing further ignition. (3) Remove the resulting dark-coloured deposit with forceps, and thoroughly wash with water containing a little antiseptic. For extensive burns requiring hospital treatment, ultra-violet radiation is recommended and dressings of picric acid, etc., as for ordinary burns. Phosphorus burns suppurate much more than ordinary burns, and the healing period is usually three to four weeks.

Timepiece for Blind Person

Miss CATHERINE E. WILLIAMSON writes: In answer to "Inquirer" (August 16, p. 254), if he would get into touch with the National Institute for the Blind in London he would receive full particulars as to the watches which were supplied in the last war for members of His Majesty's Forces in connexion with St. Dunstan's Hostel for the Blind in Regent's Park. These watches were inexpensive, rather large in size; the face was covered, and upon pressing a spring above the winder the face opened and disclosed the time, marked by raised dots on the dial. I worked for three years at St. Dunstan's, and observed that these watches could be used by all types of cases, even those who were extremely badly injured and unable to lead a normal life. They were also used effectively by those who were slow of thought and perhaps not so well educated as others.

LETTERS, NOTES, ETC.

Abortus Fever and Sulphapyridine

Dr. J. WHITTINGDALE (Sherborne) writes: Since my note on the response of *Br. abortus* infection to sulphapyridine (August 9, p. 210) has provoked comment, may I be permitted to reply. The patient has remained well, and one may suppose that the dose of sulphapyridine effected a *sterilisatio magna* in this instance. Sir Weldon Dalrymple-Champneys, whose interest in this disease is well known, has been kind enough to inform me that of the reported cases that have been treated with the drug about 50% have apparently been cured. In this "vale of small dairies" cases of human infection with *Br. abortus* are not infrequent; it is therefore encouraging to be able to hope for a proportion of cures by means of a new drug, in place of the former regime of bed, with occasional doses of boiled milk intramuscularly.

Red Cross Work in Abyssinia

Red Cross work in Abyssinia is being carried out by a unit consisting of a medical officer, two surgeons, four Red Cross and St. John nurses from England, and native dressers. Dr. A. J. Last, the medical officer to the unit, wrote on June 27 to the Deputy Commissioner of the British Red Cross Society, Khartum: "The larger towns . . . are staffed by military doctors and the original Italian doctors. The latter cannot be sent to outlying districts, but must be kept in the larger towns on account of their personal safety. Tigre, on the other hand, had one Italian doctor only—in Adowa—and he was frightened and wanted to leave. . . . Dr. Gurney and I came to Adowa on June 13. We have taken over from the Italian doctor a former military hospital of some 200 or more beds. It is poorly equipped and staffed with incompetent native dressers. We have already begun to reorganize the place. In addition we see nearly 100 out-patients a day in the civil dispensary."

"Relaxation"

Dr. W. NUNAN (London, W.1) writes: Not being an Olympian, either as a permanent resident or in the guise of a tourist or passing explorer, but as a humble student of the literature and practice of what should be, and will be, an integral component part of the medical curriculum, may I draw attention to the airiness of the use, abuse, and ill use of the word "relaxation" in the literature of psychotherapy. A few recent examples of the nonchalant dismissal of the question of relaxation must suffice for my present purpose. In the communication of Majors F. L. McLaughlin and W. M. Millar (August 2, p. 158), which has given rise to this discussion, the authors wrote somewhat as follows: "Having placed the patient in a state of relaxation, etc." In a recently published book on the war neuroses one of the distinguished contributors to the symposium writes: "I get the patient to relax" (*sic*). Such quotations could be multiplied indefinitely, but the point is raised. One hears daily of such phrases, used by medical men to patients, as "You must try to relax," "You must relax," "Relax all your muscles," and so on. Patients say, "I cannot make myself relax," "I try to relax." The outstanding state of such patients is one of anxiety, and the anxious patient is tense. He tries to relax. He fails, because he becomes even more tense—trying and relaxing being "opposite numbers." A very contradiction in terms. His doctor, however, has insisted that the patient must relax—and the law of reversed effort at once applies. *Quis custodiet ipsos custodes?* The anxious one, indeed, does not relax even when he sleeps, and so is "more tired in the morning than when he went to bed." Naturally, because he has worked a "double shift." Perhaps these few incoherent remarks, touching lightly on the outside edge of a large, complicated, neglected subject, put up as a target, *ballon d'essai*, or what not, may draw some (informative) fire. What is relaxation? How is it obtained? Has one not seen exhausted soldiers—landed from Dunkirk and all that—lying on railway sidings, platforms, trucks, lorries, in waiting rooms, anywhere, everywhere—asleep and tense? The cat on the hearthrug, the tired dog, can relax. *Homo sapiens* cannot relax automatically. He must, alas! be taught.

Corrigendum

In his letter on the treatment of impetigo contagiosa (September 6, p. 356) Dr. F. R. Craddock is made to say that he uses a 20% solution of gentian violet. This should have read 2%. Dr. Craddock states that he has never attempted to use gentian violet in a solution stronger than 5%.